GAS JOURNAL, MARCH 27, 1940

VOL. 229 92nd YEAR No. 4010

Editorial Notes

Basis for an Understanding

BY this time most of us will have had ample opportunity of studying a document entitled "Report by the Joint Gas and Electricity Committee," which, we understand, has been circulated to all gas and all electricity undertakings whether members of the respective national bodies or not. When, a week or two back, we announced that the position as regards the "truce" was shortly to be clarified and crystallized we were wrong. The truce is dead; long live the Understanding. This is what we gather from the document in question, and indeed a grasp of this fact goes a long way towards a sympathetic reception of the Joint Committee's Report, whatever individual feelings were previously towards the "truce."

There was, in fact, never intended to be a truce, which implies essentially a suspension of activities, and the word no doubt came into use as the readiest to hand when half-a-dozen representatives of the Gas Industry found themselves last October with about the same number of electricians waiting in the ante-room of their common enemy, the Secretary for Mines, whose offence had been the imposition of rationing upon the two industries at the outbreak of war. Some quick thinking convinced both parties that joint representations to the Department would be far more likely to have effect than if made separately, and the two parties entered the Presence as brothers in arms. So impressive—and presumably commonsense—does this approach appear to have been, that the officials of the Department very early withdrew from the Conference leaving the gas and electricity representatives to consider the matters at issue with a view to reaching agreed recommendations in regard to amending the rationing Order. A Joint Committee was formed, an agreed Memorandum was prepared for the Secretary for Mines, after full consideration of which he announced on Dec 19 that the Government was prepared forthwith to repeal the Fuel and Lighting Order in so far as it related to gas and electricity, and to draft a new Order substantially embodying all the recommendations of the Joint Committee. The new Order would not, however, come into force unless and until a change in existing circumstances should make it necessary to reintroduce fuel rationing. The Secretary for Mines promised close collaboration with the Joint Committee at every stage in the drafting of this Order.

Such, in broad outline, is the history of the Joint Committee which has now produced a Report. If, for the sake of dramatic effect, we have slightly exaggerated the suddenness of its origin, it certainly came into being without time for much thought as to a plan of campaign except a joint presentation to the Ministry of the case against rationing modern, scientifically prepared fuels (if, for the sake of convenience, we may classify electricity as a fuel). Equally, of course, there was little time either to name or define the form of agreement between the two industries as to their future activities which they found almost at once would be necessary if their joint representations to the Ministry were to have any effect, and which, indeed, the Secretary for Mines made almost a condition of his acceptance of their recommendations. And so there came into use the word "truce" which has given wrong impressions in many quarters and has implied to many minds a state of affairs which was never intended to exist.

No Suspension of Activity

IN other columns of this isue we reproduce the main Report of the Joint Committee, which contains its recommendations as to the *understanding* which should be approved by both industries in regard to their conduct in the exceptional conditions of wartime. It will be seen that the passive state of affairs, or suspended activity, which is implied by a truce was never visualized, and it is recommended that *whilst the understanding should not operate to check the activities of either industry in the securing of new business*, &c., there should be abstention in propaganda and other directions from statements of a damaging or disparaging nature. Regional consultations are recommended as the readiest means to ensuring an agreed line of conduct, and nationally the Joint Committee proposes that it shall remain in being. To it could be referred all matters of importance arising in connexion with the understanding, whether nationally or regionally, and it would be available to act nationally in so far as might be necessary in all matters connected with the drafting or administration of the new Fuel and Lighting Order. While the Committee feels that each industry should continue to maintain all proper contact with its consumers and should also be as *active in regard to new business* as wartime conditions may from time to time justify, the understanding might with advantage lead to arrangements in each locality designed to prevent the displacement of the *existing* apparatus of either industry. And we entirely agree with the Committee in its conclusion that "nothing could be worse for the future relationship between the two industries than the existence on paper of the terms of an understanding and mutual co-operation

which did not receive both nationally and regionally the reality of translation into actual and day-to-day practice."

The Committee's Report is, we believe, in the hands of every gas undertaking. On later pages we reproduce the historical survey and main recommendations. The document circulated contains also an explanatory Memorandum and an account of the excellent case which the Committee was able to put forward for the exclusion of gas and electricity from rationing schemes.

We believe that the full explanation of the suggested understanding will have the effect of commending it to many who, in uncertainty as to its exact nature, have hitherto been opposed to it. Particularly welcome will be the removal of any misapprehension as regards the need to suspend normal activities or curtail efforts towards natural expansion. Perhaps, provided of course that the understanding is loyally respected on both sides, it will not be found unduly arduous to refrain from "statements of a damaging or disparaging nature"; in the best salesmanship circles it has, after all, long been an accepted principle that you cry your own wares rather than decry those of your competitor. To some, even, this arrangement, begun as a wartime expedient, may appear as the dawn of a new era in which the gas and electricity industries will recognize that there is ample room for the expansion of each on a scale as yet undreamed of, and that their *common* aim must primarily be the elimination of the use of coal in its raw state. This can be for the moment but a dream, visualizing understandings going far beyond the present one, recognition of spheres of interest, and many other factors which it is beyond the scope of this present article to discuss. All the same, it may appeal to some.

Suffice it for the moment to give full and sympathetic consideration to the present Report of the Joint Committee, realizing that an understanding of some kind is absolutely necessary if the Committee is to be in a position to continue the admirable work it was able to do last autumn. It seems to us likely that many will find far less onerous than they had anticipated the terms which they will be expected to accept; that, in fact, they will consider them no handicap at all in pursuing activities which must in any case be limited by war conditions. Their very elasticity will make them capable of ready adaptation to local conditions, and so remove objections which might otherwise have been raised.

Oil from Coal

IN reply to questions in the House of Commons on March 12, Mr. Geoffrey Lloyd, Secretary for Mines, said that he intended to make a statement on the whole subject the following week. That statement on the "whole subject" was made in the House last Wednesday, and we cannot think that it takes us very far. He admitted that the effective use of home-produced substitutes for imported oil is a subject of such wide scope and importance that it calls for the mobilization of the best technical and business experience available, for which reason half-a-dozen aspects of the problem are being rapidly surveyed in the light of war conditions by half-a-dozen committees in the formation of which the Secretary for Mines was instrumental. Mr. Lloyd announced the names of the chairmen of these committees: Sir William Jowitt (oil from coal by synthesis), Lord Henley (low temperature carbonization), Mr. Davidson Pratt (high temperature carbonization), Viscount Ridley (internal combustion engines), Mr. Irvine Geddes (colloidal fuel), and Sir Clement Hindley ("the more efficient use of fuel generally"). Interim reports, the Secretary for Mines stated, were asked for wherever possible in order that "*immediate action might be taken.*"

All of which sounds pleasant enough but, as we have said, does not take us very far. The Leader of the Opposition asked Mr. Lloyd to assure the House that on any recommendations made "very vigorous and immediate action would be taken"; and that assurance was given. But Mr. Attlee gave notice that, in view of the importance of the matter, the Opposition would raise the question again at the earliest opportunity. With politics, with the success of this or that political party, the "JOURNAL" is not, of course, in the least concerned, but this question of home-produced alternatives to imported oil cannot be begged indefinitely, and it would be helpful to have something a little more concrete about the Government's wartime attitude than emerged from the debate in the House of Commons on Wednesday of last week. It is not sufficient to know that half-a-dozen committees are sitting on the problem, viewing it from half-a-dozen aspects. We have already been at war for seven months, and decisions one way or another should not only be taken but, as far as possible, be made known. We ought to be capable of formulating a defined policy designed in the nation's best interests, whether or not such policy will please everybody.

After all, it cannot be said that the problem is a new one to come up for consideration. In 1938—early in that year—we had the Government report of the Falmouth Committee—the Sub-Committee on Oil and Coal of the Committee of Imperial Defence, which Sub-Committee was appointed in 1937 and went into the matter thoroughly. In 1937, too, a Special Advisory Committee of the Labour Party was appointed to enquire into the production of oil from coal. The report of that Committee was published in June of 1938, though actually it was completed before publication of the Falmouth report. It was the subject of comment in the "JOURNAL" of June, 1938, at which time—under peacetime conditions, of course—we suggested that from the economic point of view it was not a particularly convincing document. To what extent the position has changed due to war conditions and expectations we do not know, but we may recall that among the recommendations contained in the report were the establishment of five low-temperature carbonization plants at a cost then estimated at £1,250,000, six synthesis plants estimated to cost £11,400,000, and one hydrogenation plant estimated to cost £5,000,000 (as distinct from the Falmouth Committee's estimate of £8,000,000 for a plant of like capacity). And now, three years later, we have these half-dozen committees set up by the Secretary of Mines to consider the use of home-produced substitutes for imported oil.

However, there was some encouragement to be gained from the remarks of Mr. Geoffrey Lloyd in the House last Wednesday. We refer to his observations on benzole recovery and on the production of tar and pitch. Additional crude benzole is, he stated, being recovered (for which the Gas Industry must be in the main responsible) at the estimated rate of 15,000,000 gallons a year, and that an extension of voluntary effort should secure a further 12,000,000 gallons a year. He went on to say: "I should like to express my appreciation of what has already been done by voluntary effort and to appeal to all those who are not doing so to recover all possible benzole. The maximum production of benzole *of all qualities* [the italics are ours] is urgently required in the national interest." Again, our production of tar, creosote, and pitch can take the place of imported fuel oil and bitumen to the extent of some 300,000 tons in the current year. Arrangements, we are glad to learn, have already been made for making use of these products in this way. The Gas Industry is undoubtedly proving itself once again in wartime, as in peacetime, a national asset of the first magnitude, and the more its potentialities are understood and realized, and the more its work is given support and encouragement, the better.

Coke Sales

COMMENTING last week on Mr. W. L. Boon's recent Address on the selling of coke in a properly regulated and co-ordinated market, we said that planning in wartime is no less important than planning in peacetime, and that the time to plan ahead for the regulation of the coke market and to obviate difficulties during war and probable difficulties in the post-war

period, is now. A more imaginative and more rational fuel policy in general is needed, and the rational movement, particularly in wartime, is to subject more coal to carbonization and to replace raw coal in the domestic hearth by smokeless fuels. The natural trend in peacetime was towards this end. In point of fact already one-quarter of the total home consumption of coal is carbonized, and in the space of two decades the domestic market has changed over from coal until now one-fifth is using carbonized fuels. In wartime every ton of coal carbonized has added importance in the supply of explosives and oils.

In his Address, Mr. Boon put forward the view that, as a result of the policy which war conditions alone may determine, we may after the war have more coke for sale, on a slumping market, than at present is realized. Why, though, should the market slump? We are of the opinion that if we plan now to sell coke there will not be a slump. Of course, we are writing at a time when coke is difficult to obtain, which may perhaps give us a biased view of its excellent heat output; but we know from past experience what graded coke can do, and from more recent experience what ungraded coke is incapable of performing. Coke can be a gracious or an ungracious fuel according to the way in which it is prepared, handled, and delivered to the consumer. The present state of affairs, regarding which there may be good-natured grouses, has brought home to consumers dependent on coke for their hot water—and general warmth in the home—what a useful fuel it is and what good delivery service they have enjoyed, without thinking about it overmuch, prior to September of last year. And sales, it must be agreed, have been effected without a great deal of energetic selling effort.

During the past ten years the selling effort devoted to coke has been far less than its revenue-earning capacity has warranted. This is true when we look at the domestic market; it is equally true when we turn to the industrial (including agricultural) market. Cattle food can be produced in this country by artificial means which would save in the importation, and the transport, of foreign concentrates. Grass drying to-day ought to be considered as an industry in itself. "Drying for Victory" is a good slogan. It may not be as good as "Digging for Victory"; but it is important, and we think we should dry more grass, and use more industrial—or agricultural—propaganda towards that end. Coke is an ideal fuel for the purpose, and at any rate the Dutch Government know how important grass-drying is. That Government is encouraging grass-drying plants in Holland. Forty-one are now being erected in that country. The Belgian Government is not being idle in the matter. Is it wrong for us to suggest that we ought to take stock of ourselves?

Maintenance of Plant

UNLESS continuously and methodically cared for all plant deteriorates, and the plant for making gas and coke has a particularly high "wear and tear" factor. At the end of this war the nation will need a strong and effective Gas Industry, and the Industry will not be strong unless its plant is in first-class order. We cannot contemplate with equanimity a "worn-out" Gas Industry due to neglect which may not be self-enforced but a result of being unable to obtain with the necessary speed and in sufficient quantity the raw materials, such as steel, which it requires to maintain its plant in efficient and economical working order. For which reason we hope that the Government departments responsible will place a generous and sympathetic interpretation on its requirements, regarding the Industry as a most important national asset, which it undoubtedly is.

Next week a new scheme for the distribution of steel supplies, superseding the present licensing system, comes into force. The licensing system, it will be generally agreed, has not worked perfectly; for one thing it has not provided an adequate safeguard against the over-estimating of requirements and has not been able to assess sufficiently closely the relative urgency of competing requirements. Under the new scheme closer estimating, it is suggested, and closer allocation will meet the needs of all the Service departments and also afford supplies for public services and industrial use on a more adequate basis. Three main purposes of the rationing scheme are to secure an equitable distribution of available steel supplies; to ensure that the required quantities shall be applied to that work; and to avoid delays in delivery. Consumers will be able to base their programmes on fixed delivery periods knowing that for twelve months a definite quantity of steel will be available for the trade in which they are engaged. There has now been time to assess more closely the legitimate claims of each Government department and each section of industry; and, as we have said, we hope that the legitimate claims of the Gas Industry, anxious as it is to give its fullest aid in the war effort, will be adequately met, and that it will as a result be in a position at the end of the war to give an economical smokeless fuel supply under peacetime conditions. Under the new scheme the Board of Trade will be responsible for all home civil requirements except where specifically included under another department.

Rationed Food for Demonstrations

An interesting announcement has been made by the Ministry of Food, under date of March 15, with regard to the procedure for obtaining rationed food for the demonstrations which are to be given in the forthcoming campaign on the Right Use of Food. Organizations participating will be able to obtain special supplies of sugar and rationed meat. Food Control Committees are now authorized to issued special permits for supplies of these commodities to all organizations participating in the campaign, provided that the applications are approved by the appropriate local Education Authority. This means that approval must be obtained from the local Education Authority for Higher Education—*i.e.*, the County Council or County Borough Authority.

Permits will be issued on the basis of 2 oz. of sugar and 2d. worth of meat for each demonstration. Application forms P.S.M.1 and M.11 for sugar and meat respectively are obtainable from the local Food Control Committees, and when they have been countersigned by the local Education Authority permits will be issued for presentation to the applicant's usual supplier. These arrangements will come into force as from April 1 and will be reviewed in June next.

Forthcoming Engagements

March

29.—Manchester Association.—Meeting at Manchester. Presidential Address of T. Reynolds.

30.—Manchester and District Juniors.—Meeting at Bolton. Paper by N. Matthews, "Operations and Efficiency in Vertical Retorts."

30.—Yorkshire Juniors.—Meeting at Leeds. Paper by L. W. Roberts, "Some Experiences of the Laying of the West Yorkshire Gas Grid." Also visit to Meadow Lane Gas-Works.

April

2.—Gas Research Board.—Emergency Panel of Council, 10.30 a.m.; Finance Committee, 12 noon; Council, 2.30 p.m.

3.—B.C.G.A.—Annual Meeting of members in the Eastern District (Northern Section) at Grantham.

4.—B.C.G.A.—Annual Meeting of members in the Southern District, at Gas Industry House.

5.—London and Southern Juniors.—Meeting at Gas Industry House, 7 p.m. Paper by J. E. Cooper (Gas Light and Coke Company) on "Features of the Performance of Gas Water Heaters."

5.—North British Association.—General Meeting at Glasgow. Papers by D. D. Melvin (Edinburgh) and T. S. Lockhart (Rothesay).

6.—Western Juniors.—Meeting at Bristol. Discussion on "Wartime Problems Affecting the Gas Industry."

8.—B.C.G.A.—Executive Committee, Gas Industry House, 2.15 p.m.

9.—N.G.C.—Central Executive Board, 2.30 p.m.

9.—I.G.E.—Finance Committee, 1.45 p.m.; Membership Committee, 2.15 p.m.; Benevolent Fund Committee of Management, 3 p.m.

10.—I.G.E.—Board of Examiners, 10.30 p.m.

Letters to the Editor

Ironfounders' National Committee

SIR,—Users and designers of industrial and domestic plant and equipment are finding themselves handicapped by shortage of or delay in obtaining certain ferrous and non-ferrous metals. It may assist them to learn that the ironfounding industry has organized itself to help in the present emergency. During the past twenty years an enormous amount of work has been done to increase our knowledge of the range of materials known as the cast irons, and many of the varieties available have properties not generally associated with cast iron. Almost any metallurgical structure required can be obtained in a wide range of strengths, and standard national B.S.I. specifications are available for users, particularly 321/1938 and 786/1938. The industry itself has made great strides in continuous production methods, and generally in the precision of form, uniformity, and soundness of the product, and where necessary a wide variety of finishing processes is available. Almost the whole of the raw materials employed are found within the United Kingdom and manufacture is widely distributed.

The industry has formed the Ironfounders' National Committee, and information will be gladly sent by me or can be obtained from the Chairman of our Technical Committee, Mr. J. G. Pearce, British Cast Iron Research Association, 21, St. Paul's Square, Birmingham 3. No recommendation will be given unless there is a reasonable likelihood of the substitute material giving satisfactory service, and no charge or obligation will be incurred.

For specific cases, it would be an advantage if enquirers could send a print of the part in question, say what it has hitherto been made of and, if working under unusual service conditions (stress, temperature, wear, corrosion, &c.) what life is normally obtained. It is also desirable to know whether design in the alternative material must be a copy of the existing part, or whether conditions permit a measure of redesign.

Yours, &c.,
W. R. BLAIR,
Director,
Ironfounders' National Committee.

Orchard House,
Orchard Street, W.1.
March 19, 1940.

Ice in Gasholder Tanks

SIR,—I should like to take this opportunity of thanking Dr. Foxwell for his congratulations, and I have pleasure in discussing the points he has raised in connexion with my article on "Maintenance of Water-sealed Holders during Severe Winter Conditions."

In dealing with these questions, I will begin with Dr. Foxwell's concluding statements. These are to the effect that the standard form of anti-freezers when in proper working order are sufficient to combat frost during severe winter weather. My experience has differed from Dr. Foxwell's in this respect, as I know of cases where the anti-freezing apparatus were in proper working condition, but ice had begun to form on the surface of the tank water inside the holder. I am, however, quite ready to admit that under the ordinary winter weather conditions experienced in this country, the standard form of anti-freezing apparatus may have appeared sufficient. As we now know that extremely severe cold weather conditions may obtain during the winter months at very short notice, I think that most engineers will agree that some preparations should be made so that the usual standard forms of anti-freezing apparatus can be augmented in cases of unusually cold weather.

Dr. Foxwell says "to be of use, the steam pipe must be led to the bottom of the tank so that *all* the water would be kept warm." Now if these are Dr. Foxwell's views, how does he arrive at the conclusion that the ordinary standard form of anti-freezing apparatus is sufficient to prevent freezing of the tank water during very cold weather? These statements appear contradictory.

The fact that Mr. L. Hartley saw a tell-tale steam jet working during the year 1938 and recorded this in the "JOURNAL" on Nov. 9 of that year, is of no moment, as the method of preventing syphoning of steam pipes was probably known about the time of Newcomen, and the application of the principle to anti-freezing apparatus was, to my knowledge, in use over twenty years ago.

I do not consider that the small quantity of condensing steam issuing from the tell-tale jet which might from time to time be brought to play on the side sheeting will do any material damage. The jet may, however, be arranged in any position at the top of the piping shown in Fig. 1. It is only necessary that the escaping steam should not inconvenience the man manipulating the apparatus.

I am surprised that Dr. Foxwell thinks that a pump would be necessary when using a boiler to circulate the tank water. No pump, of course, is necessary. The principle of circulation involved is similar to the ordinary domestic hot water supply as described in most text books on "Heat." If there is any danger of the pipes connecting the tank to the boiler freezing when the plant is not in use, the pipes may be lagged.

The question as to what extent the calorific value of the gas in the holder is affected by steaming of the inlet main, of course depends upon the relative quantities of gas heated and steam used. The calorific value of the gas stored in the holder under normal working conditions should not be appreciably affected if the following steam pressures and jet sizes are used:

Diameter of Inlet Pipe.	Steam Gauge Pressure.	Diameter of Steam Jet.
Up to 12 in.	Up to 15 lb. per sq. in.	$\frac{1}{8}$ in.
12 to 18 in.	,,	$\frac{3}{16}$ in.
18 to 24 in.	Up to 20 lb. per sq. in.	$\frac{1}{4}$ in.
24 to 36 in.	Up to 40 lb. per sq. in.	$\frac{1}{4}$ in.

Dr. Foxwell writes: "It would not seem to me efficient or even reasonable to heat a large volume of water by keeping warm gas on the top of it." It would appear from these remarks that Dr. Foxwell is under an entirely wrong impression, as there is no intention of heating up the whole of the water in the tank by any of the methods I have described in my article. I am pleased that Dr. Foxwell inclines to the view that "it might be possible to warm the water beside the inlet pipe slightly and perhaps to keep the top inch of tank water from freezing." This is exactly what is required to be done; the surface of the water in the tank is the first to freeze, and damage to the inlet and outlet pipes of a spirally guided holder may be caused by a comparatively thin layer of ice on the top of the water inside the holder.

I assume that Dr. Foxwell's suggestion to fit a condenser on the outlet of a holder for cooling the gas which has been heated on entering the holder is meant to be taken in a humorous vein, so that I am not really expected to comment on this.

I have dealt with all the questions raised by Dr. Foxwell, and hope this discussion will be of some interest to your readers.

Yours, &c.,
S. M. MILBOURNE.

Wellington,
Shropshire.
March 18, 1940.

Modern Gas Storage

SIR,—Reading Mr. R. J. Milbourne's comments upon the Paper recently presented by Mr. S. Clayton Thomson, I am reminded—as I venture to suggest Mr. Milbourne needs to be—that the actual title of the Paper was "Modern Gas Storage—with Particular Reference to the Installation of a Two-Million cubic feet M.A.N. Waterless Gasholder." In these circumstances, surely it is not surprising that the Author devoted particular attention to the M.A.N. holder. Indeed, the "high spot" of the meeting was the very interesting film shown, which illustrated the progressive erection of the M.A.N. holder in question.

Mr. Milbourne's criticism of the M.A.N. type seems to me to be rather beside the point, as does also his claim that the largest holder in the world is of the Klönne dry type. No one wants to dispute the fact that a Klönne holder of 21,000,000 cu.ft. capacity has been built—and it is equally true that an M.A.N. holder of practically the same capacity (20,000,000 cu.ft.) has been operating in the U.S.A. for several years past.

In discussing the basic principles of the waterless holder, Mr. Thomson's Paper gave equal credit to both M.A.N. and Klönne types; and it is difficult to appreciate why his polite references should have called forth Mr. R. J. Milbourne's diatribe. One almost feels that Mr. Milbourne, as an acknowledged expert upon and an enthusiastic advocate of water-sealed holders, is endeavouring to convince himself of the worth of an alternative type for which his firm are licensees.

Yours, &c.,
S. LANGFORD.

16, Queen Anne's Gate,
London, S.W. 1.
March 21, 1940.

Publicity

SIR,—The second editorial note in your March 20 issue astonishes me. "Glancing through *The Times* last Saturday," you were "impressed with the prominence given by that newspaper to the development of electricity. The British Electrical Development Association celebrated its coming of age on March 15. No fewer than 500 guests attended this noteworthy event at a luncheon at the Savoy Hotel, and the Parliamentary Secretary to the Ministry of Transport explained to those present that electricity was playing a vital part in the national war effort—in the production of aeroplanes, rifles, guns, shells, and food, &c."

The implication of your reference to this luncheon is that electricity gets all the attention in the Press while gas gets very little. It is odd that a Journal which I am sure desires above all else the prosperity of the Industry which it serves has such difficulty in observing the facts.

The "prominence" given by *The Times* to the E.D.A.'s coming of age luncheon amounted to precisely 4 in. Only two other London papers reported what you describe as a "noteworthy event." The *Daily Telegraph* filled 5¼ in. with its story, the *Daily*

Herald took 10 in.—and 6¼ of those 10 in. consisted of a leading article sharply criticizing the E.D.A. for its stunting at the luncheon!

Now the Gas Industry had a somewhat similar function at Beckton a few weeks ago when the Minister of Supply, Mr. Leslie Burgin, paid striking tribute to us. In all, the London papers gave 100 in. to reporting the event (as against 19¼ in. to the E.D.A. Luncheon), but were you in an editorial note "impressed with the prominence given by newspapers" to the development of gas? No Sir!

In addition to this newspaper publicity I believe I detected the hand of the B.C.G.A. in the most valuable article on the Industry's work published in the Journal of the Government's own Propaganda Department—the Ministry of Information's "Noteworthy." You evidently considered this worth reprinting in your issue of March 13; but you made no acknowledgment to the Industry's publicists, for what I have heard described by one manager as "a scoop."

May I say, Sir, with great respect that there are many people in this Industry who would appreciate a little more attention to the positive achievements of gas and a little less emphasis on instances trivial in themselves, but which unrelated to the facts suggest that gas is beyond all hope?

Yours, &c.,
"SHAREHOLDER."

March 21, 1940.

Personal

Mr. J. DAVIDSON PRATT, O.B.E., M.A., B.Sc., F.I.C., Chairman of the British Road Tar Association and Secretary to the Association of Tar Distillers, has been appointed by the Secretary for Mines, Chairman of the Committee which is investigating the possibilities in wartime of replacing imported oil by products from the high-temperature carbonization of coal.

* * *

At the annual meeting on March 20 of the Liverpool Engineering Society, Mr. ERNEST ASTBURY, M.I.Mech.E., Chief Engineer to the Liverpool Gas Company, was installed as President of the Society.

* * *

Mr. G. E. BANKS, of the Sheffield and District Gas Company, has been elected Hon. Secretary of the Yorkshire Junior Gas Association in succession to Mr. R. H. MCCULLOCH, who was unable, through pressure of work, to allow his name to go forward for re-election. In a recent circular to members of the Association, the Council pay tribute to the splendid and unselfish service rendered by Mr. McCulloch during his term of office.

* * *

Mr. LEONARD MURRAY, Engineer and Manager of the Brynmawr and Blaina Gas Company, has been appointed a Justice of Peace for the county of Monmouthshire, and will take the oath at the next Quarter Sessions. As a result of his work for the community Mr. Murray is well-known among the people of the district. He has been associated with the Gas Industry in South Wales for many years.

* * *

The recently announced appointment of Mr. C. H. CARDER, M.I.Mech.E., as Deputy Controller for Brass, will be of interest to the older readers of the "GAS JOURNAL." Mr. Carder was for many years associated with the Gas Industry both in this country and abroad; he was one of the original members of the Central Executive Board of the National Gas Council and of the Federation of Gas Employers, and is a Past President of the Midland Association of Gas Engineers and Managers. Of recent years, however, he has been more closely identified with the non-ferrous metals industry.

* * *

We learn of the engagement of Mr. K. L. CLARK who, until the commencement of the war, was Chief Chemist of the Weston-super-Mare and District Gas Company, and Miss R. Vivien Wright, N.C.D.S., of Redditch, who is Cookery Demonstrator to the same Company. Mr. Clark is now with the Horsed Cavalry Training Regiment.

* * *

Mr. D. T. LIVESEY and his wife celebrated their Diamond Wedding this month. Mr. Livesey retired from the position of Engineer, Manager, and Secretary to the East Grinstead Gas and Water Company in 1927, following upon which he was appointed to the Board of Directors.

* * *

We regret that in last week's "JOURNAL," p. 623, we stated in error that the Earl of Dudley had been elected a Director of the Wolverhampton Gas Company.

Colonial Gas Association

Interim Dividend

At a recent Meeting of the Directors of the Colonial Gas Association, interim dividends were declared for the half-year ended Dec. 31 last at the rate of 4%, less income-tax, on the preference shares, and at the rate of 3%, less income-tax, on the ordinary shares. Exchange will be deducted from these dividends at the rate ruling on the date the dividend was declared—viz., £100 in London for £125 10s. in Melbourne.

The dividends due to shareholders on the London Register will be payable in London on April 4; but where instructions to that effect have already been given to the Association, the dividends due to such shareholders will be paid in Australia to a bank there on their behalf, or to an accredited agent.

Extensions at Motherwell

Following a report by the Gas Engineer and Manager, the Motherwell and Wishaw Town Council Gas Committee resolved to recommend: (1) that the "Wilson-Glasgow" retort benches be replaced, without delay, at an estimated cost of £27,000; (2) that the exhauster plant be extended at a cost of £1,000; (3) that the scrubbing plant be augmented at an estimated cost of £2,000; (4) that a benzole recovery plant, be installed, with accessories, at a cost estimated at £5,500. It was further resolved to recommend that, before seeking tenders for the above works, the Clerk be instructed to make representations to the Secretary of State for Scotland for authority to borrow up to the total figure of £35,000.

The Committee agreed to recommend acceptance of the tender of Alexander Anderson & Sons, Ltd., Carfin Boiler Works, to supply and instal a Lancashire boiler at a cost of £2,200, subject to authority being obtained in the matter of borrowing.

It was intimated that the Clyde Alloy Steel Co., Ltd., desire a considerable increase in the quantity of gas at present taken by them, and the Gas Engineer was authorized to afford the supply at a cost for necessary connexions estimated at £250.

Scottish Junior Gas Association

Western District

At a Council Meeting of the Scottish Junior Gas Association (Western District), held a few days ago, it was decided that the activities of the Association, which have been suspended since the outbreak of war, should be resumed.

The opening meeting of the new Session was held on Saturday, March 23, in the Christian Institute, Bothwell Street, Glasgow, at 7 p.m. The President (Mr. E. G. Smith, of Dumbarton) gave his Presidential Address, and the business included that of the Annual General Meeting of the Association.

Members of the Association who are awaiting calling-up are asked to advise the Hon. Secretary and Treasurer, Mr. Thomas Stirling, of Kirkintilloch, of the fact, when sympathetic consideration will be given to the matter of subscriptions.

Gas Propulsion in New Zealand

The first vehicle to be adapted for gas propulsion in Christchurch, New Zealand, is illustrated above. It is an 8 h.p. Ford, and was fitted up with a 160 cu. ft. gas bag and other necessary equipment by the Christchurch Gas, Coal and Coke Company. This development is the result of petrol rationing recently introduced in the Dominion, and a number of tradesman's delivery vans are now being fitted with gas bags of 250 cu. ft. capacity

News of the Week

For Meters and Appliances the Darlington Gas Department have received sanction to borrow the sum of £2,500.

Imperial Chemical Industries, whose staff has been evacuated to various parts of the country, are now planning a partial return to headquarters in Millbank, S.W.

Oil Prospecting Permits under the Petroleum (Production) Act and Regulations granted to Steel Bros. & Co., Ltd., of Fenchurch Avenue, E.C.3, in Yorkshire, Derbyshire, Lancashire, and Cheshire have been renewed by the Mines Department.

Copies of the Following recently issued British Standard Specification can be obtained on application to the Secretary of The Institution of Gas Engineers, price 2s. each: No. 593-1940. General Purpose Laboratory Thermometers. (Superseding No. 593-1935.)

After Considering the respective merits of gas and electricity for emergency lighting of the streets, the Gainsborough Urban Council have instructed their Surveyor to arrange for a length of road to be lighted, using both methods. The work of installation is to be carried out as soon as possible.

"Features of the Performance of Gas Water Heaters" is the subject of a Paper to be read by Mr. J. E. Cooper, B.Sc., of the Gas Light and Coke Company, at a meeting of the London and Southern District Junior Gas Association at Gas Industry House on April 5. Members are reminded that the award offered by Mr. G. M. Gill for an original idea published in the Technical Press has not so far been claimed.

A Record Year in orders was enjoyed by the British Thomson-Houston Company both in its home and export business. At the Annual Meeting, Mr. William C. Lusk said these included many orders for the Dominions and other overseas markets for the Company's regular products, such as turbo-alternator sets, transformers, switchgear, electric winders, rolling mill equipments, and rectifiers for railway work. All the engineering and manufacturing resources of the Company are now directed to winning the war, and the research department is working on many interesting problems in close collaboration with the scientific departments of the various services. A special effort is also being made to increase the export business. It is a sign of the activity of this undertaking that at the end of the year the number of employees was greater than in any previous year, and must be increased still further to deal with work on hand and in immediate prospect.

Approval has been Given by the Leamington Town Council to the proposal of the Leamington Priors Gas Company to install at their own expense a number of officially approved gas street lighting units for inspection purposes.

Due to the Expansion of their sales organization in Scotland and in order to provide better service to their clients, the Brush Electrical Engineering Co., Ltd., have opened new offices at 97, Waterloo Street, Glasgow, C.2. (Tel.: Central 1809.) Mr. G. B. C. Henderson has been appointed Scottish Représentative.

It has been Decided by the Gainsborough Urban Council that additional retorts shall be erected at the gas-works which, with the necessary installation work, will cost some £3,546. The Ministry of Health have given their sanction to the raising of the necessary loan.

A General Meeting of the Illuminating Engineering Society will be held on Tuesday, April 9, at 6 p.m., at 2, Savoy Hill, W.C.2, when a Paper will be presented entitled "The Photometric Properties of Luminescent Materials," by W. E. Harper, M. B. Robinson, and J. T. Bowtell.

The Yorkshire Juniors are paying a visit to Leeds on Saturday, when a Paper is to be given by Mr. L. W. Roberts, of Harrogate, entitled "Experiences in the Laying of the West Yorkshire Gas Grid." There will also be an inspection of the Meadow Lane Gas-Works, and the Clayton Award will be presented to Mr. W. S. Hubbard, of Leeds.

Students of The Institution of Gas Engineers studying in the final year for their Higher Grade Certificate in Gas Engineering (Manufacture or Supply) who are liable to be called up on reaching military age, and who are in doubt as to their position should communicate with the Secretary of The Institution of Gas Engineers, 1, Grosvenor Place, London, S.W.1, concerning postponement of their Military Service.

The Results of the cake-baking competition recently organized by the South Metropolitan Gas Company—in which the entries were sent to the Services—are announced in the current number of the Company's *Co-Partnership Journal*. A very high standard of baking was reached by 90% of the competitors, and it was no easy task to place the six prize-winning cakes in order of merit. In addition to these six prizes there were fifty consolation awards. The cakes for the Navy were sent to the smaller vessels operating off our coasts, while those for the Army and Air Force went overseas.

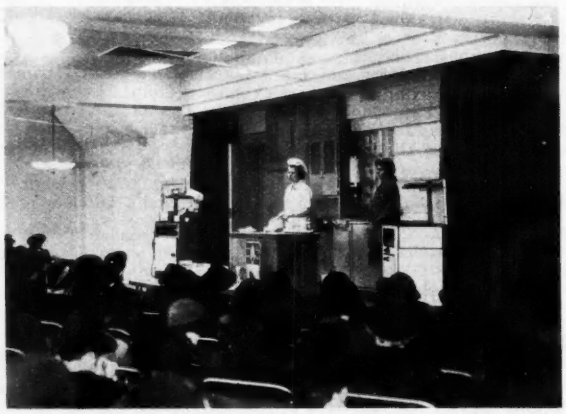
Confidence in the Future

The productive capacity of the works of Messrs. C. R. Averill, Ltd., manufacturers of Dixon's Graphite paints, jointing compounds, lubricants and greases, in Duchy Street, London, S.E.1, has been more than doubled as the result of a well-planned scheme of reconstruction and extension which, apart from a few finishing touches, has just been completed. In the 18 years since the Duchy Street premises were first occupied the business had so increased as to render an expansion an urgent necessity, and the scheme was due to be put in hand just when the war started. With commendable confidence in the future, the Company decided to carry on with the reconstruction, with the result that to-day the works has been converted from a two-floor layout to a three-floor layout.

Labour has been reduced to a minimum by the adoption of a gravity-feed system, whereby materials stored on the upper floors can flow by gravity to the mixing floor. New paint mills have been added to the existing plant, and except in the case of linseed oil, which is pumped from below, all the materials are stored on the top floor, whence they descend to the mixers by means of a charging machine on the gravity-feed principle.

The reconstruction has also made it possible to provide entirely new and comfortable office accommodation, and the comforts of the employees are also catered for in the shape of rest rooms, shower baths and other accommodation. As might be expected, gas makes its contribution to the efficiency of the reconstructed premises. Hot water for general purposes and for the shower baths is provided by an "Equator" storage heater. The general offices are provided with gas lighting and are heated by means of gas fires and radiators, and the private offices have inset gas fires. The works laboratory, the nerve centre of the establishment, is equipped with modern apparatus, and the whole scheme indicates a healthy determination to carry on in spite of the prevailing international difficulties.

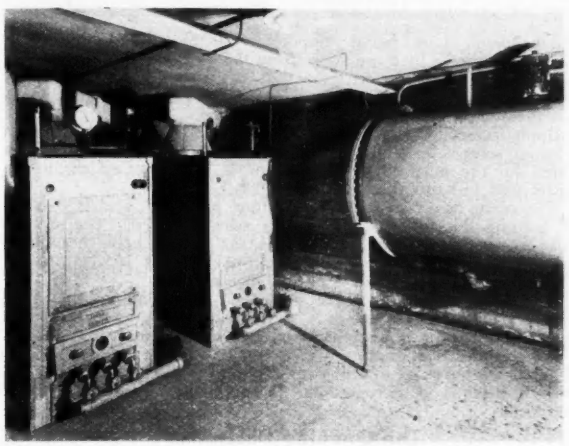
Crowded Demonstrations at Southampton



This is just a small section of the large audience who attended the Wartime Cookery Demonstrations held by the Southampton Gaslight and Coke Company in collaboration with the Parkinson Stove Company, Ltd., recently. The Gas Company's fine Demonstration Theatre was packed, and great interest was taken in the lectures, which were given daily by Miss Dorothy Scott, Diplomee, N.T.S.C., of the Parkinson Stove Company

Gas Installation for New Remand Home at Middlesbrough

GAS has been chosen for the central heating and domestic hot water installations at the new Remand Home for juvenile delinquents at Middlesbrough, which has been erected by the action of the County Boroughs of Darlington, Middlesbrough, West Hartlepool, and the County Councils of Durham and the North Riding of Yorkshire. The initiative in the matter of joint action was taken by Middlesbrough, and resulted in an agreement between the five bodies under which the cost of providing and maintaining the Remand Home will be



Ideal Gas-Fired Boilers

borne in proportion to the number of children attending the public elementary schools in the areas of these authorities.

The work of erecting and equipping the Home was left to the Middlesbrough Corporation, who are also responsible for the control and supervision of it. The site on which the building stands is one acre in area, and the building consists of a two-storeyed "T" shaped block. The accommodation provided on the ground floor comprises an office and a reception room with clothes' store, bathroom, and sanitary offices adjacent to the main entrance, and in the two wings are the day rooms, sanitary accommodation, locker rooms, &c., the girls being on one side and the boys on the other. In the central block beyond the small octagonal entrance hall is a kitchen, with its ancillary rooms, staff room, and store rooms equipped for the storage of night clothes during the day, and day clothes during the night. There are also isolation dormitories, each accommodating two beds, for each sex, with separate ablution and sanitary annexes. All the rooms on both floors are connected by well-lighted corridors. The cost of the work was £13,978.

The whole of the building is heated by radiators on the low-pressure hot water system. The central heating boiler is an Ideal 3 GBA5 with a rating of 390,000 B.Th.U., the maximum gas consumption of which is stated to be 975 cu.ft. per hour. All the hot water in the building is provided by another Ideal 3 GBA5 gas-fired boiler. The gas boilers are shown in the accompanying illustration.

Licences for Scrap Metal

An important change in the method of operation of the control of scrap iron and steel is announced by the Ministry of Supply. The change is contained in a new Direction (No. 2) to supersede, as from April 1, the Direction (No. 1) issued with the Control of Iron and Steel (No. 7) (Scrap) Order, 1940. Hitherto it has not been necessary for purchasers to obtain licences to acquire scrap iron and steel, save for four special grades, but under the new Direction any person desiring to acquire scrap iron or steel must be authorized by licence to do so, except in the case of any person, other than a person operating an ironworks or steelworks or foundry or forge, who confines his acquisitions to quantities not exceeding in the aggregate one ton from any one person in any one week.

This exception has the effect of leaving local authorities and voluntary organizations free to continue house to house and other collections as before. For the time being it is intended to issue general licences to merchants, and restricted licences to consumers according to the quantity they require. Application forms for licences can be obtained from the offices of the Iron and Steel Control, 11, Tothill Street, Westminster, S.W.1.

Running-in of Automobile Engines

Control of Gas Supply

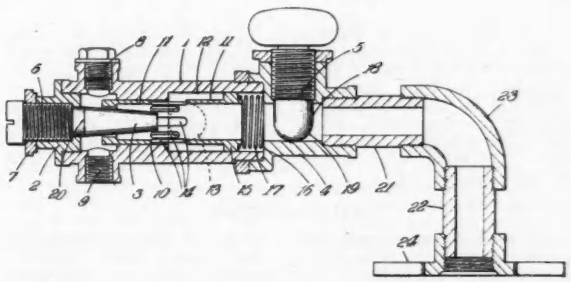
A patent taken out by the Gas Light and Coke Company, W. Dieterichs, F. W. Hutchings, J. Cross, and W. J. Inman (No. 516,547; application date June 28, 1938) is concerned with an automatic control device for the mixing of gas and air for internal combustion engines.

The invention is illustrated in the accompanying drawing, which shows in sectional elevation a control device designed for the running-in of automobile engines.

The device comprises a cylindrical casing 1 into one end of which is screwed a bush 2 carrying a metering pin 3 and over the other end of which is screwed a connecting piece 4 provided with a valve or throttle 5. The head 6 of the metering pin 3 is screwed into the bush 2 so that the position of the pin can be adjusted, and a locking nut 7 is provided for locking the pin in its adjusted position. In the wall of the casing adjacent to the bush there are provided two gas inlets 8, 9, at diametrically opposite positions for left or right hand connexion. Part 10 of the passage through the casing beyond these inlets is narrowed and the piston 11 forms a sliding fit in this narrowed part and is adapted to move over the metering pin 3 which projects into the narrowed part 10.

The wider part 12 of the passage beyond the narrow part 10 is provided with an air inlet 13 and the wall of the piston 11 is provided with slots 14 which are adapted to be uncovered or obscured as the piston moves out of or into the narrow portion 10 and thus allow more or less air to enter the piston. The outlet end of the piston which does not move over the metering pin is provided with a thickened cylindrical portion 15 which forms a sliding fit in the wider part 12 of the passage through the casing 1. Between this thickened portion 15 and an internal projecting annular part 16 of the connecting piece 4 is provided a spring 17 which tends to force the piston 11 over the metering pin 3 to close the annular passage between the pin 3 and the piston 11 through which gas passes. The valve or throttle 5 in the connecting piece, which serves as an alternative to the accelerator pedal of the engine, is of the screw-down type and the valve part is in the form of a cylindrical stem 18 with a hemispherical head 19 which when screwed down completely fills the cylindrical passage through the connecting piece. The patentees claim that accurate control of the admission of air-gas mixture to an engine can be obtained by this means.

The slots 14 in the wall of the piston 11 for the admission or air are made alternately long and short so that on starting, when the piston just begins to move, only half of them are



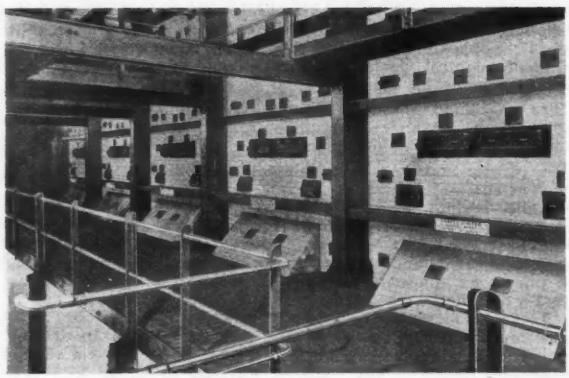
open and a rich gas-air mixture is provided. In order to ensure correct proportioning of gas to air drawn in through the device, the metering pin is in the form of a truncated cone of 2° taper. A small part 20 of the pin 3, for example 3/16 in., adjacent to the screwed head 6 is cylindrical.

When the pin is screwed as far as it will go into the bush, 1/16 in. of the portion 20 remains uncovered. The tapered portion of the pin is 19/32 in. in length and has a maximum diameter of 7/16 in. The piston 11 is provided with four slots $\frac{1}{8}$ in. in width and $\frac{1}{4}$ in. long and four slots $\frac{1}{4}$ in. in width and $\frac{1}{2}$ in. long and its external diameter is $\frac{3}{4}$ in.

The control device may be connected to an internal combustion engine by screwing the piece 4 on to a suitable plug provided on the engine manifold, or in place of the petrol carburetter by means of stub nipples 21, 22, elbow 23, and a flange 24. The suction of the engine will move the piston against the spring and will draw in gas round the metering pin and air through the slots in the side of the piston, the amount of air-gas mixture admitted to the engine being controlled by the valve 5, or alternatively by a butterfly valve under governor or pedal control.

New Drakes Vertical Installation at Farnham

On March 18 a new Drakes Continuous Vertical Retort Installation was inaugurated at the works of the Farnham Gas and Electricity Company by Mr. H. C. Hale, Chairman of the Farnham Urban District Council



Producer Platform

THE site upon which the installation has been erected adjoins the existing horizontal retort house, the foundations for supporting the whole structure being of pre-cast pile formation. The house is of steel-framed construction and is of the panelled type, the whole being formed with 4½ in. pressed building bricks set in cement mortar. Steel-cased window frames are arranged to provide an equal distribution of light and ventilation.

The roofs and ventilators are of customary design, a portion of the side bays being covered with patent glazing, and the remainder with asbestos sheeting.

The new carbonizing plant, of Drakes patented design, comprises five settings, each containing four retorts, No. 65 model, which are constructed of Meltham toughened silica material throughout their entire length, with the exception of the fireclay top mouthpieces and the segmental cooling chamber at the base, the whole of the surrounding silica setting materials being of the same quality as the retorts

Each setting is divided into units of two, and each chamber is provided with an independent gas and air supply, with regulators grouped in easily accessible positions. The arrangement permits of the the temperatures of the settings being regulated with the minimum of effort to suit the varying output to meet any seasonal demand for gas. The method of draughting is such that when the required temperature is attained, further adjustments are seldom necessary.

Each retort has a throughput of 6 tons of coal per day when the plant is producing gas of 510 B.Th.U. quality. The whole of the brickwork forming the carbonizing plant is insulated with "Fosalsil" insulating bricks.

The gas for heating the retorts is provided by means of a twin producer to each setting of four retorts each of ample capacity, and of the step grate type. The fireclay material in the construction of the plant is of Messrs. Mobberley & Perry's and John Morton's manufacture.

Dust Prevention

The coke chambers and extractors are of Drakes' design and manufactured from their special "Rafrakton" metal. The discharging doors are of the self sealing pattern with centre fasteners. Atomizing sprays are fitted in each coke chamber for the purpose of preventing the spread of fine dust during discharging operations. The sprays are automatically regulated and controlled by the mechanism operating the extractors.

Tecalemit forced lubrication is provided for all bearings on the extractors and drives, and is operated from a central point.

The gas passing through the foul main is controlled by a 14 in. Bryan Donkin retort house governor with by-pass, and thence is connected into the works mains. A 14 in. Peebles safety relief valve is also embodied in the arrangement.

The spent gases from the retort settings are conducted through steel-cased, brick-lined flues to a Spencer-Bonecourt waste heat boiler, situated on the charging platform, having a heating surface of 2,000 sq. ft. and a working pressure of 120 lb.

An auxiliary producer is provided for the purpose of augmenting the supply of waste gas to the boiler at periods when the minimum number of retorts are in operation and insufficient waste heat is available to permit of the production of steam to meet immediate works requirements.

Coke Plant

The coke screening and storage plant is of steel construction, filled in with brickwork to match the retort house, but is entirely independent of it, being supported on pile foundations of a similar character to those supporting the carbonizing plant.

The coke is transferred from the gravity bucket conveyor to a 24 in. cross band conveyor by means of a jigger feed, and in turn is either delivered into a "coke as produced" bunker or over the scalping screen, the smalls being passed forward over Drakes Zimmer screens, and the larger either deposited in a hopper provided for the purpose, or, on the other hand, passed through a cutter and forward to the screens.

The plant has a capacity of 20 tons per hour, and is capable of grading the coke to the various sizes required. The storage hoppers have a capacity of 130 tons, the screens being housed-in, the structure being filled with brickwork similar to the hopper. The roof is covered with asbestos sheets.

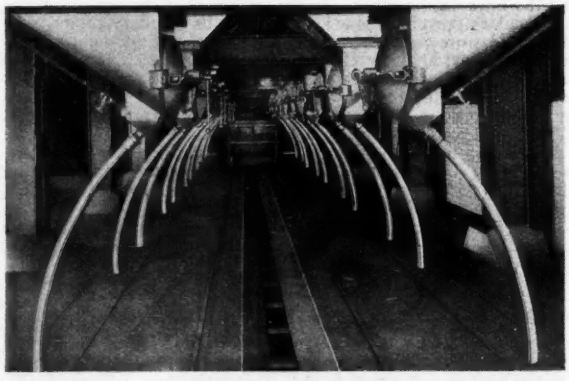
Mechanical de-breezers are provided for cleaning the coke during bagging operations. A Belle Isle weigher situated on a spacious platform is also included in the scheme.

All the electrical motors are of the Lancashire Dynamo Company's manufacture, totally enclosed, gas-works type, and fitted with Brookhirst hand operated starters, working on a.c. current 400 volts.

The Opening Ceremony

For the inaugural proceedings a platform had been erected outside the new retort house and Mr. W. H. Bennett (Chairman of the Company) presided, being accompanied, among others, by Mr. Hale, Directors and shareholders of the Company, members and officials of the Urban District Council and representatives of other public bodies in the town and district.

Addressing those assembled, the Chairman extended a very hearty welcome from the Chairman and Directors of the Company and expressed gratification that so many men prominent in the life of Farnham and district should have honoured them with their presence on that occasion. Unfortunately, owing to the war, said the Chairman, there had been some delay in the completion of the plant. It had been completed now for several months, and during the intervening time it had undergone trials for reliability and guarantees of technical results. He was pleased to say that those guarantees had been carried out to the full. He was very pleased to say at this time that the plant was entirely British. It was English in design, English materials had been used throughout, and it had been erected by English labour. They felt that in adopting that plant they had improved the working conditions of their men and had not detracted from the amenities of Farnham.



Coke Discharging Floor

Mr. Hale then pressed an electric button which set the machinery in motion and said he had great pleasure in formally inaugurating the new retort house.

The company were conducted over the new works, the many interesting features of which were explained by engineers of the Company.

A complimentary luncheon which followed at the Bush Hotel was presided over by Mr. Bennett, who was supported by Dr. J. Hussey (Managing Director), Mr. E. F. Crundwell and Mr. J. H. Donaldson (Directors), Sir Harry Brittain, K.B.E., C.M.G., LL.D., Mr. H. G. Hale, J.P. (Chairman of the Farnham Urban District Council), Mr. G. E. Aldridge (Vice-Chairman of the Council), Mr. M. T. Thompson (Managing Director of Messrs. Drakes, Ltd.), Mr. A. V. Barraclough (Chief Engineer of the Mid-Southern Utility Company), Mr. J. R. W. Alexander (General Manager of Associated Gas and Water Undertakings), and Mr. A. E. Logsdon (General Manager and Secretary of the Farnham Gas and Electricity Company).

The toast of "The King" was honoured on the call of the Chairman, who afterwards proposed "The Guests." In doing so, he expressed the pleasure the Company felt at having with them their good friend Councillor Hale and members of the Farnham Urban District Council, also representatives of the Alton and other Rural Councils in whose areas the Company supplied gas. The Farnham Company, he said, had recently associated itself with a number of other undertakings known as Associated Gas and Water Undertakings, and that had enabled Farnham to give a greater assurance to the public for the maintenance of gas supplies than would otherwise have been possible.

A toast to "The Contractors" was submitted by Mr. Logsdon who said the officials and staff of the Farnham Gas and Electricity Company were very proud of the plant which had that day been inspected. He was sure one and all would agree that the installation they had inspected would be a lasting tribute to the skill and craftsmanship of the contractors and that they were to be congratulated upon a fine job. Mr. Thompson responded.

"The Company" was a toast proposed by Sir Harry Brittain, who said that the outstanding point that appealed to him as a visitor unconnected with any electricity or gas company was the effect of the Gas Industry in connexion with the war. He thought that was overlooked by the average citizen, but that it was a fact every citizen ought to know. The Gas Industry as established in peacetime had been so accepted as a part of our ordinary structure that they were apt to overlook the profound effect it had during a war. The gas-works of this country were war factories which turned out not only gas and coke, but the raw materials used in the making of shells, aviation spirit, resin for aeroplane parts, solutions for the treatment of rubber, and countless other derivatives.

Then he would like to point out how right and wise that great Industry was to-day in resuming once more its traditional policy of telling the public through the Press what it was and what it did. He believed he was right in saying that the Gas Industry was the first industry throughout the Empire, if not throughout the world, which was organized specifically for the purpose of letting the public of this and other countries know what it was and what it did by every means of publicity and advertisement. And the man who played a prominent part in that great drive was his dear friend, the late Sir Francis Goodenough, whose passing was a sorrow to all who had the pleasure of knowing him, as well as to the Industry he so ably served.

The toast was responded to by Dr. Hussey, who referred to the Associated Gas and Water Undertakings group not as a mass amalgamation of companies, but rather, as the title suggested, as associated undertakings, each retaining its own local individuality and staffs; and, provided there was full efficiency, each company was left absolutely alone.

The proceedings terminated with the presentation to Mr. Hale of an inscribed silver salver by the Chairman as a memento of the occasion.

London and Counties Coke Salesmen's Circle

The first meeting of the London and Counties Coke Salesmen's Circle to be arranged since the outbreak of war was held at Gas Industry House on March 13, when MR. ROY SUMMERSON (Luton), the Chairman of the Committee, presided over a good attendance of members

The HON. SECRETARY (Mr. F. A. Haddock) having read the notice convening the meeting, the CHAIRMAN welcomed the members and said how pleased he was to see such an excellent gathering that afternoon.

It was unanimously agreed that the present Committee should be re-elected *en bloc* to continue to serve until the end of the current year, for which resolution the Chairman briefly returned thanks.

Chairman's Report

In the course of his Report on the work of the Circle during the past year, Mr. Summerson observed that their activities were abruptly interrupted by the outbreak of war. The Committee met, however, on Oct. 18 to survey the situation, and they decided to meet again in four months' time with a view to arranging the Annual Business Meeting in March, 1940—as a result of which the present meeting was fixed.

After reference to the previous session's programme, including the visit to the Solid Fuel Research Laboratories and Works of the Eagle Range and Grate Company at Birmingham, when the members had the opportunity of meeting representatives of the Midland Coke Association, the Chairman went on to report that there was little alteration to record so far as the membership of the Circle was concerned. Four members had left the district to take up other employment, while twelve were on Active Service, giving a total membership at the present time of 106. He asked all members who joined the Forces to advise the Hon. Secretary. It was of interest to note that the attendance at ordinary meetings during the last three years had seldom been more than fifty or less than forty, which, having regard to the total membership and the wide area covered, was indicative of the enthusiasm of members and of the value of the Circle.

The preparation of the Coke Salesmen's Manual proceeded during the summer of 1939 with a view to publication in the autumn. Here again, however, the outbreak of war necessitated a suspension of the work, and it was not deemed expedient to proceed to the stage of publication. The present position was that all the first drafts for the various sections proposed for the Manual were complete and ready for final editing.

It was not his intention, said Mr. Summerson, to deal at the moment at any length with future prospects. But in view of the difficult conditions which coke salesmen had recently experienced and were likely to experience, the Committee were determined that the work of the Circle should go on if at all possible. They hoped to arrange further meetings when expedient, and suggestions for discussions would be welcomed. They could hardly expect at the present juncture to expand the scope of the Circle; but now was the time to prepare plans for such work. The coke market in the future was going to give them a most strenuous time in maintaining the sale and price of coke. They must prepare for that time now.

With this in mind, Mr. Summerson felt that a beginning was desirable in two main directions. First, that the publication of the Coke Salesmen's Manual should be proceeded with. Secondly, he would urge the necessity for increased co-operation between gas salesmen and coke salesmen. The Gas Industry would in the future need all the sales power it could muster, and it was imperative that the two departments—gas and coke—should realize their interdependence.

There must be many occasions during the work of a gas salesman when, in addition to effecting a gas sale, he could, if he was vigilant, see a chance for a coke sale or a coke installation. Unfortunately, many gas salesmen appeared to ignore the existence of their undertaking's other fuel—coke. How often did they see coke appliances relegated to a very minor position in the showroom? While the coke salesman was ever ready to acknowledge that gas was the primary and most important product, he should be assured of more co-operation and assistance from his gas sales colleagues. The revenue from coke played a most important part in the finances of gas undertakings, and that revenue must be fully maintained in order that the price of gas might be kept down. Might they hear more about coke sales and less about coke disposal.

In conclusion, Mr. Summerson paid tribute to the members of the Committee and particularly to their Hon. Secretary for their loyal and enthusiastic work.

Attitude of Gas Salesmen Towards Coke

In the course of a short discussion on the report which followed, Mr. W. L. BOON (General Manager of the London and Counties Coke Association) said that the Chairman had raised one most important point in his remarks which affected them all very closely—namely, the indifferent attitude of the gas salesman in relation to coke sales. A strenuous endeavour must be made to rectify the position whereby potential coke sales were being lost because of this indifference. The Circle was not in a position to bring the matter officially to the attention of individual undertakings. In the smaller undertakings the position did not arise in the same degree as the same salesman probably covered both fuels; but in the larger concerns there appeared to be a distinct lack of help from the gas side. The revenue derived from coke sales was very

much more important to the finances of gas undertakings than many people realized—and it was important not only to maintain that revenue but, if possible, to increase it. And, declared Mr. Boon, we do not get proportionate sales energy in the coke marketing field—a position it was hoped to correct so far as was possible. There were difficult times ahead before the war was over, but they must look to the future and prepare for post-war conditions.

A suggestion was put forward for a joint meeting of gas and coke salesmen with a view to elucidating the point raised by the Chairman and Mr. Boon, in reply to which it was pointed out that this matter was rather one of policy. The Circle could, however, make it known that in their opinion there was insufficient co-operation between the two sides. As a result of discussion on this point the following resolution was unanimously adopted on the proposition of Mr. E. V. COLLIER, seconded by Mr. H. W LOVELL:

> "That this Circle is of opinion that greater co-operation is desirable between gas and coke salesmen."

Mr. A. TENNANT (East Surrey) said that much of the difficulty was due to the fact that the gas salesman usually came under one department of an undertaking and the coke salesman under another. If the two could be associated from a management point of view there would be more success.

Further discussion regarding difficulty of approaching architects ensued. Mr. Boon believed that while previously the coke salesman had to knock at the architect's door—and seldom gained admittance—now the architects were coming to the coke interests for advice and assistance in their heating schemes. The L.C.C.A. were, in fact, dealing with as many enquiries as they could possibly handle at the present time. While great progress had been made in this direction still more could be made.

A vote of thanks to the Chairman and Committee concluded the business of the meeting, and the members subsequently adjourned to meet the representatives of the Coke Distributors' Salesmen's Circle in a Joint Meeting which followed.

JOINT MEETING WITH COKE DISTRIBUTORS' SALESMEN'S CIRCLE

At this meeting Mr. W. DANIEL (President of the Coke Distributors' Salesmen's Circle) took the chair, and in the course of some introductory remarks, observed that in view of the present circumstances they could congratulate themselves on having such a full meeting. He would like, he said, to take this opportunity of saying how greatly he appreciated, on behalf of the Distributors' Circle, the honour they had done him in asking him to preside on that occasion. It had been agreed by the Committee of both Circles that the absence of so many members, on Active Service and for other reasons, would result in the meeting being sparsely attended, and that this Joint Meeting should be called. He felt sure they would agree with the course adopted, since it enabled the members of both Circles to become more acquainted with each other, and extended the opportunity for an exchange of views and experiences. He hoped they would continue to see more of each other during the coming years because their work lay along the same lines. It might seem to some that a meeting like this at such a time was hardly necessary. After all, they had many difficulties in obtaining what they were trying to sell at the present time without listening to views on the attitude they should adopt in the actual selling of it. But they had to visualize a long term policy. This association of theirs was unique in the fuel industry. They were the first body in any fuel industry to get together with a view to organizing sales of fuel. That being so, although they were at the present time in the "doldrums," as it were, yet they must undoubtedly prepare their programme for the days which he hoped were not too far distant when they would be able to go out wholeheartedly and proclaim their wares with confidence in an increasingly progressive coke market. Although they were experiencing many difficulties at the present time, and perhaps many people had no good word to say of the fuel industry as a whole, from their own point of view they were learning a great deal about coke and the potentialities of that commodity in the fuel markets. Hitherto they had always been in the habit of supplying the customer with what he asked for. They had sometimes suggested a certain course or certain experiments to improve the utilization of the fuel; but during the past few weeks experiments had been forced upon them, and it had been a surprise to many to see how coke had been used under all sorts of adverse conditions, which had borne out that it was an extraordinary fuel and adaptable to many different circumstances.

Mr. Boon then gave his address on "The Present Coke Position —and Post-War Outlook," which was published in last week's "JOURNAL." We give below a summary of the discussion which followed.

The CHAIRMAN, thanking Mr. Boon for his Address, said Mr. Boon was outside the influence of direct competitive selling, and therefore they, as salesmen of coke, could always look to him to champion their cause. Similarly, if they had any grouses against the producers on questions of coke quality, Mr. Boon would take the matter up on their behalf.

In the course of a short discussion on Mr. Boon's address, the latter was thanked for his positive attitude towards sales, and endorsement was given to his plea for the sale not of coke as such but of the service it would render. No one was interested in the commodity, but people were vitally interested in the amenities and the usefulness thereof. Price only became important when it was accompanied by a statement of fact as to what service the consumer was going to receive in return.

On the subject of domestic complaints in regard to coke performance, it was observed by one member that in 90% of the cases the trouble was due to faulty fitting of the appliance—though the suppliers usually blamed the appliance, and the appliance makers blamed the fuel. It was pointed out that, through their "approved list," the L.C.C.A. were determined that the fault should not lie in the appliance itself. In spite of the fact that precise instructions were sent out with every appliance, the builder was still inclined to give insufficient attention to the fitting. Furthermore, builders were often left to determine what sort of appliance to put in. They spent the money, and therefore claimed the right to determine the type of appliance. But they had no right to claim a service, which the householder did not receive. The Association, it was stated, was doing its best to rectify this position.

In answer to a question as to the anticipated state of furnace coke supplies in twelve months' time, Mr. Boon observed that his reply must be hypothetical, for no one could tell what the position would be. The surplus furnace coke produced was 3 to 4 million tons over and above the normal requirements of the blast furnace industry and export. They in the south had been in the habit of receiving 1 million tons of that surplus, and they had tried to build the market to that figure. During the war the demands of the steel industry were likely to extend, and exports were so vital at the present time that it was logical to suppose that the demand for export would increase rather than decrease in the immediate future. For these reasons they could not expect to receive in the south the same quantity of furnace coke as heretofore. Nor could they expect to get supplies of furnace coke from the north during the winter months. Unless they received it before October there would be considerable difficulty in obtaining supplies.

In response to the suggestion that gas undertakings should increase the thermal value of their coke and decrease the value of their gas in order to enhance the coke market, Mr. Boon observed that the primary business of the Gas Industry was to produce gas, and coke would always remain a secondary product. He would look upon any measures to improve the coke yield at the sacrifice of gas yield as a retrograde step. Mr. Boon went on to remark that the future position with regard to furnace coke was that the steel works, in order to become self-sufficient, would tend to put down their own coke ovens and would use the gas for heating the ovens—and that process would go on because it was actuated by sound precepts. Thus the general market at home and abroad would continue to absorb more furnace coke for domestic and industrial purposes from colliery coke ovens—and more would be produced than ever before. The pre-war margin was 7 million tons; so they could get additional quantities now. But the position depended upon absorbing the gas, which would otherwise be wasted. Thus the cycle was proceeding along determined lines.

Value of Co-Operation

Tribute was paid by a representative of the distributors for the manner in which the producers had met the difficulties of the distributors during the extremely difficult times they had lately experienced. It had made it a great deal easier to give customer service.

From the production side appreciation was also expressed of the way the distributors had helped the gas undertakings. A case was cited when a gas undertaking during the cold spell had no coke at all. They appealed to the distributors to help them, and the latter immediately responded by delivering furnace coke to the gas-works for the water gas plant. Much of this spirit, it was stated, was directly due to the policy of the Coke Association in their efforts to bring the two sides together, of which this meeting was perhaps an example.

Mr. Boon said that he was imbued with this co-operative spirit because he had seen it work so effectively. After all, they were all interested in the same product; whether they were working along exactly parallel lines or not it was easier to work together. It had always been the policy of the Association to recognize the value of the goodwill factor. Some people would discredit this attitude and say that there was no room for sentiment in business. "But," declared Mr. Boon, "I should be very sorry if this were the case. It is a fine thing for us—members of two Circles who are to some extent in competition with each other—to meet here together and freely discuss our problems and learn something of the other fellow's point of view."

The meeting concluded with hearty votes of thanks to Mr. Boon for his Address, on the proposition of Mr. F. BRACEY COOK, and to the Chairman for so ably presiding over the gathering, on the proposition of Mr. J. W. BINGHAM.

Joint Gas and Electricity Committee

A Report has now been compiled by the Joint Gas and Electricity Committee which was formed last October for the purpose of combined representations to the Mines Department on the subject of fuel rationing schemes. A necessary preliminary to the joint move was an understanding between the two industries, which has been referred to as the "truce"—a misnomer in view of the Joint Committee. The Report, which we publish below, is submitted to the Industries in general for approval and ratification. Copies have been circulated to all gas and electricity undertakings, together with an explanatory Memorandum and details of the case for the exclusion of gas and electricity from rationing which was presented to the Mines Department in November

Report Submitted for Approval by the Two Industries

(1) The introduction during the first week of the war of the Fuel and Lighting Order, 1939, adversely affected the interests of Gas and Electricity Undertakings alike, and the action of the Mines Department in convening on Oct. 10, 1939, a meeting of duly appointed gas and electricity representatives provided an opportunity for the two industries jointly to consider their respective positions as affected by the Order.

(2) The Gas Industry held the view strongly that the rationing of gas was entirely inimical to a policy of coal conservation. They had previously made representations to the Mines Department, who in consequence amended the Order in certain respects, notably by the exclusion of prepayment consumers of gas from rationing.

(3) The Electricity Supply Industry had also made representations to the Mines Department that the blackout had already brought about an appreciable reduction in the consumption of electricity and that its further rationing was unnecessary. They also made representations that certain provisions of the Order were calculated to react unfairly upon the Electricity Supply Industry *vis-à-vis* the Gas Industry.

(4) In consequence of these independent representations, the Mines Department issued an invitation to the National Gas Council and the Associations representing Electricity Supply Undertakings to a Joint Conference at the Mines Department for the purpose of making an endeavour to reach agreement in regard to the representations which had been made.

(5) A preliminary meeting between the gas and electricity representatives was held in private previous to the conference with the officials of the Mines Department, and it was decided that when the conference opened the gas and electricity representatives should jointly emphasize once more that in their view the rationing of either gas or electricity was altogether wrong, and subject to this important point of principle that they should jointly suggest to the Department that it be left to the gas and electricity representatives to consider the matters at issue with a view to reaching agreed recommendations in regard to amending the Order.

(6) This procedure was adopted, and the proposal for joint consultation was readily accepted by the Mines Department. The officials of the Department thereupon withdrew from the conference, leaving the gas and electricity representatives to confer together.

(7) The gas and electricity representatives then proceeded to sit as a Joint Committee with Mr. R. W. Foot as Chairman and Mr. John Mould as Vice-Chairman.

(8) The Joint Committee proceeded to consider those provisions of the Order which the Electricity Supply Industry regarded as adversely affecting their interests, but a preliminary discussion revealed that a necessary introduction to a complete agreement in regard to the form of the Order and its subsequent operation was that an understanding should be reached between the two industries in regard to their activities.

(9) It was thereupon agreed that on this basis a Memorandum should be prepared for submission to the Secretary for Mines, setting out recommendations in regard to the amendment of the Fuel and Lighting Order.

(10) It was decided to incorporate in this Memorandum a statement setting out the case for the total exclusion of both gas and electricity from rationing. A Sub-Committee was appointed for the purpose of preparing this Memorandum, which was subsequently approved by the Joint Committee and submitted to the Secretary for Mines.

(11) The Memorandum, after dealing fully with the case for total exclusion from rationing, set out as a sort of basic recommendation that in connexion with the administration of the Order the gas and electricity representatives in each district should act as Assessors to the Local Fuel Overseer in relation to all questions affecting the rationing of gas and electricity, and should be given certain definite powers to be exercised jointly. It proceeded to recommend that all consumers of electricity by prepayment meter should be excluded from the operation of the Order in the same manner as consumers of gas by prepayment meter had already been excluded, and it also recommended an increase in the minimum ration of electricity in cases where electricity was used for cooking. A further recommendation was that this ration should be applicable also in cases where electricity was used for water-heating.

(12) The Memorandum also included a recommendation that the Order should be limited to domestic premises to the exclusion of all industrial premises, large and small, and that some restriction should be placed on the use of fuel oil for all purposes.

(13) The Secretary for Mines having considered the Memorandum, invited the Joint Committee to a further conference on Nov. 29, 1939, when the recommendations contained in the Memorandum were discussed in some detail. The Secretary for Mines stated that he had been impressed by the case submitted for the complete exclusion of gas and electricity from rationing, but added that he was not convinced that such action was desirable at this stage. He also stated that a decision of the two industries to reach agreement in regard to their activities would be a valuable contribution towards national co-operation, and that he was prepared to accept in principle a substantial part of the recommendations for the amendment of the Order.

(14) On Dec. 19, 1939, the Secretary for Mines invited the Joint Committee to a further conference, when he informed them that as a result of further consideration of the Memorandum submitted by the Joint Committee the Government was prepared forthwith to repeal the Fuel and Lighting Order in so far as it related to gas and electricity, and to draft a new Order substantially embodying all the recommendations of the Joint Committee. He stated that this Order would not, however, come into force unless and until a change in existing circumstances should make it necessary to reintroduce fuel rationing. The Secretary for Mines promised close collaboration with the Joint Committee at every stage in the drafting of this Order.

(15) The Joint Committee are well aware that they have received no mandate from their respective Associations to agree the terms of the understanding between the two industries but, having based their recommendations upon the assumption that such an understanding would be made effective, they feel it incumbent upon them to set out in general terms their views as to the manner in which effect should be given to this understanding.

(16) The Joint Committee are convinced that both industries would be making the greatest possible mistake were they to allow any understanding to have the effect of withdrawing either industry from every proper activity consistent with the present circumstances.

(17) It is recognized that wartime conditions are so materially different from peacetime conditions that the activities and publicity work of each industry should be properly co-ordinated and reconciled with the wartime atmosphere, but that the understanding should have the effect of withdrawing either industry from its public would, in the opinion of the Joint Committee, be absolutely wrong. The Joint Committee feel that these activities could and should be conducted upon the basis of a proper understanding between the two industries, and they, therefore, have the following recommendations to make on this subject :

(i) That there should be eliminated from all future publicity and propaganda any statement of a damaging or disparaging nature.

(ii) That while the understanding should not operate to check the activities of either industry in the securing of new business, there should be eliminated completely from all such activities statements or suggestions of a damaging or disparaging nature.

(iii) That there should be eliminated all canvassing of a damaging or disparaging nature.

(iv) That with a view to achieving the object aimed at in (i), machinery (which might well be the Joint Committee referred to in (vi)) should be provided for enabling consultation to take place in regard to the subject-matter of national publicity and propaganda.

(v) That with a view to achieving the objects aimed at, closer co-operation should be encouraged regionally between the representatives of the respective industries engaged in sales and publicity work.

(vi) That there should be established a National Joint Committee to which could be referred all matters of importance arising in connexion with the understanding between the two industries, whether nationally or regionally, and which would act nationally in so far as might be necessary in all matters connected with the drafting or administration of the new Fuel and Lighting Order.

(18) In submitting these recommendations the Joint Committee desire to say that they are particularly impressed with the importance of the following considerations:

(*a*) That an understanding on the broad lines of their recommendations is to all intents and purposes essential if the two industries are to act together in connexion with the drafting of the new Fuel and Lighting Order and its administration if and when introduced.

(*b*) That while the Joint Committee feel that each industry should continue to maintain all proper contact with its consumers and should also be as active in regard to new business as wartime conditions may from time to time seem to justify, they also feel that the understanding might with advantage in present circumstances lead to arrangements in each locality designed to prevent the displacement of the existing apparatus of either industry.

(*c*) That if this Report and its recommendations receive the approval of the various National Organizations, of which the undersigned are the representatives, the Report should be circulated to each individual undertaking in both industries with the blessing of its National Body, and that all possible steps should be taken to ensure the recommendations becoming generally effective.

The Joint Committee feel strongly that nothing could be worse for the future relationship between the two industries than the existence on paper of the terms of an understanding and mutual co-operation which did not receive both nationally and regionally the reality of translation into actual and day-to-day practice.

(*Signed*) R. W. Foot, John Mould, H. F. Carpenter, J. C. Dalton, E. V. Evans, A. J. Fippard, Leslie Gordon, B. Handley, Wade H. Hayes, Jas. Jamieson, H. C. Lamb, T. P. Ridley, C. S. Shapley, A. W. Smith.
E. J. Fottrell, A. Home-Morton, J. W. Simpson
(*Joint Hon. Secretaries*).

Leakage Surveys in Distribution Systems

By E. C. KOLLOCK,
Chief Engineer, Atlanta Gas Light Company

From a Paper to the Third Annual Institute for Gas Plant Operators, University of North Carolina

THE Company with which I am associated has operated about two dozen gas distribution systems in the South Eastern States during the past 10 years. These systems have been serving coal gas, carburetted water gas, and butane air manufactured gas, as well as natural gas through both old systems originally built for manufactured gas and relatively new systems built for natural gas. It can be realized, therefore, that our unaccounted-for gas problems are many and varied. During the past ten years we have developed methods of keeping in touch with the trend of the unaccounted-for rates in the various systems, and have tried a number of different methods of leakage surveys.

This subject may be properly divided into two divisions—namely, "Where to Work" and "How to Work." A brief discussion of some of the methods that we have tried is given below, as well as various data sheets showing some of the results obtained.

Where to Work

The first problem to solve is to decide which towns have leakage rates sufficiently high to justify intensive survey efforts. To keep a running check on this, we have a card file showing for each town the monthly sendout, sales, unaccounted-for gas, miles of main, percentage unaccounted-for, and the unaccounted-for per mile of 3 in. equivalent main. From these data similar figures are prepared for a 12-months' period ending the current month. A series of curves is then prepared, plotting the 12-months' ending figures of unaccounted-for per mile of 3-in. main. If a town's curve is rising continuously, we know that the unaccounted-for rate is steadily getting higher, and if it is falling the rate is getting lower. Towns with similar conditions are plotted on the same sheet—that is, all of the manufacturing towns are on one sheet, the towns serving natural gas through converted systems on another, and the original natural gas systems on a third. A copy of the sheet showing his town is furnished to each local manager every three months, so that he can note a comparison between his town and the others in his class.

We consider that the manufactured gas and the converted systems should stay below the 200,000-250,000 cu.ft. per mile of 3-in. main work and the relatively new systems below the 50,000 cu.ft. line to be satisfactory. With such a large number of systems to keep track of, it appears that at least a few of them are always in a certain amount of trouble. However, at the present time the average for all of the towns operated is about 175,000 cu.ft. per mile of 3-in. equivalent main, which is a fairly satisfactory figure.

The curves mentioned above are only used as running checks, and we use other means, where possible, to keep in closer touch with the current conditions. In some of the towns, a curve showing the daily minimum hour sendouts compared with the same period last year, with the minimum atmospheric temperatures plotted on the same chart, is effective, although this method is of no value in those towns with high industrial loads.

After it is decided that a certain town needs special attention, we then, when possible, try to determine in which part of the town the start should be made. In the larger towns this is done by sectionalizing and determining the minimum hour sendout to each section. By actually reading the larger customers' meters over this hour and allowing about ½ cu.ft. per hour per domestic customer for pilot lights and water heaters, a fairly accurate picture of the actual leakage may be obtained for each section. This method is of value only in the summer time, however, as we have too much heating load to make it accurate in the winter time.

How to Work

We have tried a number of different methods of general leakage surveys. I find that we have records of the results obtained on several of them, and brief descriptions of each

TABLE 1.
SUMMARY OF COSTS OF VARIOUS TYPES OF LEAKAGE SURVEYS.

	Leaks Located per Mile.	Cost per Mile.	Cost per Leak Found.
B—Bar testing mains and services	72.00	$51.00	$0.72
C—Special testing of services	16.00	43.30	2.68
D—Listening devices :			
Steel system badly affected by electrolysis ...	14.00	2.70	0.19
Steel system with only very few large leaks...	0.18	2.80	15.50
Old C.I. systems—no general electrolysis ...	1.90	6.60	3.55
E—Odorization surveys	4.80	4.85	1.00
F—Special manhole inspection	0.39	1.15	2.94
G—Water meter and key box inspection (down-town area)	3.15	3.13	0.99
H—Vegetation method	1.50	2.35	1.57

TABLE 2.

BAR TESTING SURVEYS.

Town.	Miles Bar Tested.	Cost Bar Testing.	Leaks Located.	Leaks per Mile.	Cost per Mile.	Cost per Leak.
No. 1 ...	18.4	$1,810.00	3,866	210	$98.50	$0.47
No. 6 ...	10.2	591.00	722	71	58.00	0.82
No. 7 ...	11.3	619.00	504	45	54.70	1.23
No. 11 ...	6.9	550.00	327	47	80.00	1.68
No. 18 ...	26.6	843.00	700	26	31.70	1.20
No. 19 ...	20.0	416.00	612	31	20.80	0.68
	93.4	$4,829.00	6,731	72	$51.00	$0.72

All towns mainly of low-pressure cast-iron systems. Majority of leaks found on bell joints and a relatively few on services.
Town No. 1—All bar testing done through concrete pavement. Heavy clay soil.
Towns No. 18 and No. 19—Soil sandy. Most of bar holes made in grass plots along curbs.

method may prove of interest. The following types of surveys are discussed:

1. Systematic bar testing of mains and services.
2. Special testing of services.
3. Surveys with listening devices.
4. Manhole water meter, and key box inspection.
5. Odorization surveys.
6. The vegetation method.

A summary of the results obtained on these surveys is given in Table I. Unfortunately it is not practical to give the reduction in gas leakage obtained, as in most cases accurate figures are not available. The best measure of the success or failure of a survey that we have been able to give, therefore, is the total number of leaks found. This is often misleading, as leaks are of many different sizes, and a survey that will turn in all of the leaks in a system may be too expensive to consider for a total distribution system.

Bar Testing

In Table 2 is shown the details of this type. This work was done in 1931 and consisted of the systematic bar testing of a total of about 100 miles of main located in six different towns. A bar hole was made over each joint in the main and over each service tap. Several additional holes were made over each service. Combustible gas indicators were used to determine the leakage.

The difference in the cost per mile in the different towns resulted from the difference in paving and soil conditions. Towns No. 18 and No. 19 were sandy and the bar testing was done behind the curb and the cost per mile was between $20 and $30. Town No. 1 has a heavy clay soil and all of the holes were driven through concrete pavement, and the cost per mile was practically $100. The average for all six towns was $51 per mile.

TABLE 3.

SPECIAL TEST OF SERVICES.

Town No. 1.

Miles of streets covered	9
No. of days on survey	39
No. houses visited	1,126
No. services inspected	973
Leaks on services located	130
Leaks on meters	15
Total leaks	145
Services not leaking but in bad condition	99
Total cost of survey	$390.00
Miles covered per day	0.23
No. leaks located per mile	16
Poor condition services located per mile	11
Cost per mile	$43.30
Cost per leak	$2.68

This method resulted in locating five or six times as many leaks per mile as we have ever found by any other method, but it is also by far the most expensive survey we have ever made. The vast majority of the leaks found were bell joint leaks and relatively small.

This is a very thorough survey and should result in locating practically all leaks. It is far too expensive, however, for general use, and we consider that it should be used in only special districts where it is desired to eliminate even the minute leaks.

This is a special method that we have recently been trying in a certain district where we have a large number of services from 30 to 50 years old. A foreman and two labourers make a house-to-house inspection and examine each service where it comes out of the ground or enters the front building wall, making excavations where necessary. If the pipe is found badly rusted it is renewed even though it may not be leaking. The foreman runs a repair crew in conjunction with the inspection, and permanent repairs are made as the work progresses.

This is a rather expensive method of surveying, costing about $43 per mile, but we believe it is justified in certain districts where the proportion of old services is large, to eliminate the hazard of gas escaping under or near buildings.

Survey with Listening Devices

In Table 4 are shown the results obtained on a number of surveys we have made with Soundographs and Stethoscopes. In making a survey of this type the instrument is attached to the service pipe, and the sound of escaping gas may be heard for varying distances, depending among other things upon the shape of the hole through which the gas is escaping.

I have divided these surveys into three divisions to illustrate that under certain conditions we have been highly successful in the use of these instruments and in other cases the surveys have been failures.

The first division, consisting of town No. 13, resulted in the location of 3,000 leaks or 14 per mile, at a cost of $0.19 each. In this town we had a very leaky condition due to galvanic electrolysis, and we were carrying about 1 lb. pressure. The electrolytic action formed holes in the pipe resembling orifices and the resulting sound caused by the escaping gas could be heard for a considerable distance. It was only necessary to test about every 400 ft. We consider this survey highly successful, and in this particular case these instruments form the most economical method of controlling the situation.

The second division of Table 4 consists of surveys in four towns where we have fairly new steel pipe in good condition, but occasionally a large leak develops due to a broken service or some similar cause. These are all small medium pressure towns, and when such leaks are suspected a survey is made of the entire town, making tests every 500 or 600 ft. By proper organization the survey of one of these small towns may be made in one to two days. The cost per leak in this division appears high, being about $15, but the leaks located were very large, amounting to 500 to 700 cu.ft. per hour. We therefore consider these surveys successful and believe these instruments represent the most economical method of handling such situations.

The third division of Table 4 consists of six towns with systems of the cast-iron, low-pressure type. Tests are made on a house-to-house basis, and, while some of these surveys were fairly successful, we believe that more effective and economical methods may be used in towns where the pressures

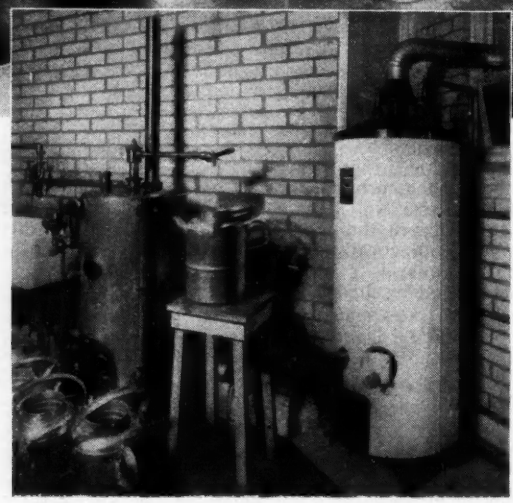
TABLE 4.

LISTENING DEVICES SURVEYS.

Town.	Miles Main Tested.	Tests Made.	Days on Survey.	Cost of Survey.	No. Leaks Located.	Miles Main Tested Per Day	Tests per Day	Tests per Mile.	Leaks per Mile.	Cost per Mile.	Cost per Leak.
No. 13 ...	215	3,094	106	$580.00	3,002	2.02	29	14	14.0	$2.70	$0.19
No. 14 ...	6	48	1½	15.00	1	4.00	32	8	.17	2.50	15.00
No. 15 ...	12	108	1½	28.00	2	6.80	62	9	.17	2.35	14.00
No. 16 ...	5	65	1½	22.00	1	3.40	43	13	.20	4.40	22.00
No. 17 ...	10	75	1½	28.00	2	5.80	43	8	.20	2.80	14.00
Total 2nd Division	33	296	6½	93.00	6	5.20	46	9	.18	2.80	15.50
No. 5 ...	13	390	13	75.00	18	1.00	30	30	1.4	5.75	4.15
No. 6 ...	76	1,492	60	360.00	45	1.26	25	20	.6	4.75	8.00
No. 7 ...	17	564	27	150.00	77	0.63	21	33	4.5	8.85	1.95
No. 8 ...	32	600	34	185.00	85	0.95	18	19	2.6	5.80	2.18
No. 11 ...	68	1.915	87	500.00	45	0.78	22	28	.7	7.35	11.10
No. 12 ...	20	1,124	29	220.00	150	0.70	39	56	7.5	11.00	1.47
Total 3rd Division	226	6,085	250	1,490.00	420	0.90	24	27	1.9	6.60	3.55

NOTES: 1st Division—Consists of a town with steel pipe badly affected by electrolytic punctures; 1 lb. gas pressure.
2nd Division—All small towns with steel pipes in good condition, but with only a very few large leaks. One to 10 lb. pressure.
3rd Division—Old low-pressure cast-iron systems. Majority of leaks in bell joints and rusted services.

prepared



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are low and most of the leaks likely to be rusted services and leaking bell joints.

Odorization Surveys

Two odorization surveys are listed in Table 5. They were made in town No. 13 described above, where a large number of electrolytic punctures existed. We used about 15 lb. of ethyl mercaptan per million cu.ft. of gas and were highly successful in locating leaks. As may be noted, the largest part of the cost of this work consisted in answering complaints. These complaints were very heavy, due to the fact that unodorized gas had been formerly used. The cost of odorization surveys, therefore, should be less than the figures shown, in towns that practise continuous odorization.

TABLE 5.

ODORIZATION TESTS.

Town.	Miles Main Tested.	Number Customers Affected.	Odorizing Material	Labour Walking Mains.	Labour on Complaints.	Total Cost.	Leaks Located.	Leaks per Mile.	Cost per Mile.	Cost per Leak.
No. 13 : Test No. 1	62	6,000	$70.00	$25.00	$229.00	$324.00	249	4.0	$5.20	$1.30
No. 13 : Test No. 2	88	8,400	$100.00	$40.00	$265.00	$405.00	477	5.4	$4.60	$0.85
Totals	150					$729.00	726	4.8	$4.85	$1.00

NOTE.—Steel pipe badly affected by electrolytic punctures—1 lb. pressure.

We have made a number of special surveys in other towns using Calodorant and Pentalarm, and have been successful in locating leaks, but I have not the details at hand. The principal objection to surveys of this nature, however, is the large number of customer complaints which result, even if continuous odorization is practised and the rate merely raised over a short time for an intensive survey. A windy day will also affect the effectiveness of this method. However, this method is of great value under some conditions.

In town No. 1 we have been making for a number of years a systematic inspection of the manholes in certain districts by means of combustible gas indicators. The manholes in the business district are inspected about once a month and the trunk cable lines in other parts of town about every three months. The downtown route is covered by a man on foot and the outside route by a truck.

The practice was started as a safety measure to minimize the hazard of gas getting into the large buildings in the business district, and it has resulted in our getting on the track of a considerable number of leaks that we would not have known about otherwise. The cost is not excessive, amounting to 2½c. per manhole per test, and we consider the work well worth while.

In order to make a thorough inspection of the downtown area of one of our towns, we have just completed a test of all the water boxes, gas key boxes, and other openings in the pavement, in this district. This inspection resulted, as shown in Table 7, in the locating of 81 leaks at a cost of $1.00 each. This is probably the least expensive method that we have tried in a completely paved district of this kind, and probably locates most of the leaks of any size. Such a survey would probably not be as effective in the residential sections, where the pavement coverage is less.

TABLE 6.

MANHOLE INSPECTION.

Town No. 1.

Miles of streets covered down-town	15
Miles of streets covered outlying	43
Total miles streets covered on one round	58
Manholes tested down-town on one round	1,003 in 6 days
Manholes tested outlying on one round	1,325 in 6 days
Number tests made in 1938	12,336
Total gas indications obtained	384
No. separate manholes showing gas	221
No. of days on survey	72
No. miles of streets surveyed	262
No. leaks located	102
Total cost of survey	$300.00
Cost per manhole test	$0.025
Cost per mile	$1.15
Cost per leak	$2.94

Vegetation Method

For a number of years it has been the practice in some of our towns to make systematic inspection with our own employees during the spring months to note where the grass along the streets had been affected, and many leaks have been located in this manner. During the past summer we were approached by the representative of a forestry service, and an attempt was made to have us employ a forestry expert to make such surveys of our towns. Our first reaction was that it would be unnecessary to employ an expert to do work that we could do with our own men. However, in order not to pass up anything that might be of assistance to us in our fight against leakage, we agreed to give him a two days' test. We started him in a town that had been pretty thoroughly worked by several survey methods during the preceding year, and when he came in the first day with 32 leaks we were persuaded to give him a longer test. The result of these test days were such that we finally decided to have 10 towns practically completely surveyed. The details are shown in Table 8.

TABLE 7.

WATER METER AND KEY BOX INSPECTION IN DOWN-TOWN DISTRICT.

Town No. 1.

Miles of streets covered	25.6
No. of days on survey	19
No. of tests made	4,280
No. of leaks located	81
Total cost of survey	$80.00
Miles covered per day	1.35
No. leaks located per mile	3.15
Cost per mile	$3.13
Cost per leak	$0.99

The method used on this survey was as follows: We furnished a car and driver, and the forester rode on the running board where he could see both sides of the street. The car was driven slowly, and the forester noted the condition of all vegetation within his vision. When he saw something that looked suspicious, the car was stopped and a bar hole or two made in the suspicious spot. Tests were made with a combustible gas indicator. If gas was found (and it usually was) a report sheet was filled out showing the location, kind and size of vegetation affected, how badly it was affected, the reading on the gas indicator, amount of space apparently affected by leaking gas, and other pertinent data. These detail sheets were later sent to us as permanent records together with other detail sheets showing data on trees noted as having been seriously affected by some other cause than leaking gas. At the end of each day's

TABLE 8.

VEGETATION METHOD SURVEY.

Towns.	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10.	Totals.
Approx. miles main in dist. system	674	28	98	27	24	105	162	41	24	28	1,211
Approx. miles main covered on survey	624	20	60	20	16	100	132	11	24	28	1,035
No. days on survey	33	1	3	2	1	3	16	1	1	2	63
Large leaks located	22	3	10	—	2	12	56	2	2	14	123
Medium leaks located	102	10	14	1	10	22	237	5	5	30	436
Small leaks located	332	20	30	3	25	45	495	10	12	15	987
Total	456	33	54	4	37	79	788	17	19	59	1,546
No. trees injured by gas	59	2	17	—	2	13	33	8	3	11	148
No. shrubs injured by gas	31	1	7	—	—	4	21	—	1	4	69
No. sq. ft. lawn injured by gas	10,858	537	1,256	3	1,657	1,815	15,249	620	155	6,828	38,978
No. trees reported injured by other causes	15	3	8	—	—	0	8	—	0	0	34
Payment to Forestry Service	1,028.90	31.75	100.05	60.60	31.10	93.10	491.45	31.40	31.10	61.45	1,960.90
Est. additional cost of guide and car	228.00	10.00	12.00	17.50	13.00	30.00	124.80	12.00	10.00	20.00	477.30
Total cost survey	1,256.90	41.75	112.05	78.10	44.10	123.10	616.25	43.40	41.10	81.45	2,438.20
Miles covered per day	19.0	20.0	20.0	10.0	16	33.0	8.3	11.0	24.0	14.0	16.5
No. leaks located per mile	.73	1.65	.90	.20	2.30	.79	6.0	1.36	.80	2.10	1.5
Cost per mile	2.01	2.08	1.87	3.90	2.75	1.23	4.66	3.94	1.71	2.90	2.35
Cost per leak	2.75	1.39	2.07	19.50	1.19	1.55	.78	2.90	2.16	1.38	1.57

work a pencil memorandum was turned in to the distribution department showing the locations of the more serious leaks, so that work could be started on them promptly.

In the 10 towns we had surveyed this past summer, we covered a total of over 1,000 miles of main and located something over 1,500 leaks. These leaks ran all the way from broken mains to relatively small bell joint leaks. The total cost averaged $2.35 per mile, including the cost of the guide and car. This cost was increased above what it otherwise would have been on account of the very large number of bell joint leaks located in town No. 7. In general, the smaller the number of leaks found per mile, the lower was the cost per mile.

We consider that this survey was highly successful in all towns except No. 4, where we are supplying butane-air gas.

As stated previously, our first reaction was that our men could do this work as well as an expert. After visiting quite a number of locations when leaks were found, however, I must admit that I have about been convinced otherwise. A number of large leaks were found where the amount of vegetation affected was so small that no noticeable damage had been done as far as the amateur eye could see.

This vegetation method most certainly will not turn in all of the leaks in town, as the largest number of leaks per mile that we found in any of the towns by this method was in No. 7 where six leaks per mile were located, whereas Table 2 shows that the smallest number found per mile by the bar test method was 26. However, for a quick inexpensive survey that will locate most of the large size leaks, this is the best method that we have tried. All our local operating forces in the towns where this method was tried, are very highly enthusiastic and they consider that, in view of the cost, this is the most successful survey we have ever made.

Conclusions

The general conclusion that we have reached in regard to this leakage problem is that it is necessary to fit the proper method of survey to each particular case. A scheme that will work successfully in one place may not work in another. From our experience in using various types of surveys, however, we believe that the following general recommendations may be made:

In relatively new systems where most of the trouble is probably due to a few large leaks caused by broken pipes, and the like, a Stethoscopic survey is the most satisfactory, to be made when such large leaks are suspected. A Stethoscopic survey is also of great value in cases where the trouble is caused by electrolytic punctures, such as occur from galvanic electrolysis, especially where the gas pressure is 1 lb. or more. Second choice for these classes of systems is odorization.

A periodic general survey by the vegetation method over practically all distribution systems is of great value, excepting in butane-air gas systems, completely paved sections, and possibly in some very recently piped districts. This vegetation method is also of value just before and just after a general "Carbosealing" programme. If a survey is made ahead of the Carbosealing, the larger leaks, which may be due to broken mains or very badly leaking joints, may be repaired, thereby saving Carboseal. The survey after the Carbosealing should locate most of the leaks not stopped by Carboseal.

In completely paved sections of old low-pressure systems, where it may be dangerous to bar test due to cable lines, &c., we believe periodic inspections by the water meter and key box method will give best results. This may be supplemented by frequent surveys of manholes.

In very old districts a house-to-house inspection of services is very desirable. Also in those districts where the proportion of old services is not high a selective inspection should be maintained, and the older services inspected.

In conclusion, I would like to call attention to the great progress that has been made during the past 10 years in the technique of leakage surveys. During the old days about the only method we had to locate leaks was to bar test and use our noses. We now have combustible gas indicators, artificial odorization, Stethoscopes, and many other special tools. We do not believe, however, that perfection in methods of making leakage surveys has been reached by any means, and the Industry as a whole should continue research to develop new tools and methods for this work, to the end that our natural resources will be conserved by the reduction of our large annual unaccounted-for gas.

New Large Scale-Cooking Range

Another Radiation Production

While undertaking extensive development work on the domestic gas cooker—as witness the recent introduction of the No. 345 and 348 "Regulo New World" cookers, Radiation, Ltd., have at the same time by no means neglected improvement in larger-scale cooking equipment, and the firm have now introduced No. 3458 "Regulo New World" double-oven gas range, which is commodious yet compact and is the subject of this description.

Our illustration indicates the excellent appearance of this model, and there can be no doubt that it is an appliance in which "eye-appeal" and practical utility are happily blended. The front frame of the range is of cast iron, white vitreous enamelled, and the whole structure is based on a rigid cast and wrought iron framework. Not least among the distinctive features are the neat supporting plinths, which embody levelling screws for use on an uneven floor.

Each of the two independent ovens, of the latest "New World" design with single back burner and bottom flue outlet, is fitted with its own "Regulo" of the new cleanable type which has already proved a notable step forward from the maintenance point of view. The oven on the left is of the same size as the 345 "New World" (door opening 16 in. high × 15¼ in. wide, oven depth 14 in.), while that on the right has 2½ in. wider door opening, corresponding to the 348 oven. Each oven burner is readily lighted from a lighting point at the front of the oven using the Radiation gas taper included in the specification.

The hotplate equipment consists of six boiling burners and griller, all with automatic ignition and of the non-lighting-back type. Two of the boiling burners are of the high speed ring type (26 cu.ft./hr.), three are "Duplex Rado" burners (18 cu.ft./hr.) and the sixth is a "Simplex Rado" burner (also 18 cu.ft./hr. capacity).

The neat tap handles are safely housed below the front top rail and so protected from being turned on inadvertently, those with the Duplex burners having dual fans whereby both the simmering and the full-on positions are positively indicated. The new high capacity grill (38 cu.ft./hr.) has a solid pierced plate for toasting and grilling, and the three runners of the grill frame give positive grilling positions. The perforated grill sheet permits fats, &c., to drain to the bottom of the pan, thus avoiding the smoky vapour associated with grilling when liquids and fats are open to the heat from the grill frets.

The range depicted is fitted with a short splashplate, but if preferred a plate-rack and backplate of the usual type can be supplied. The overall dimensions are 45 in. wide by 22 in. deep, the height being 44 in. with splashplate and 57 in. with plate-rack.

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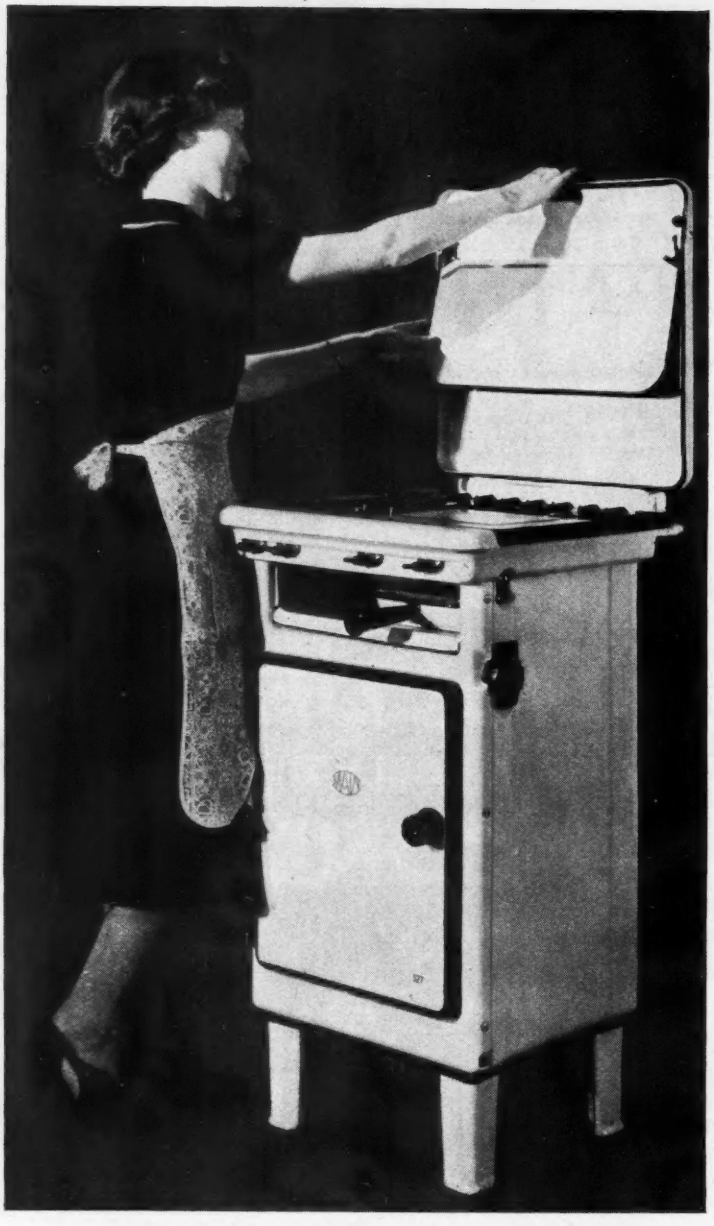

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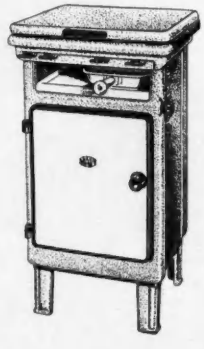

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MAIN

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Gas Undertakings' Results

British Gas Light

The net profit for the year of the British Gas Light Company (a full report of whose Annual Meeting will be given in next week's "JOURNAL") amounted to £102,866, and after adding £59,187 taken from the statutory Reserve Funds of the Hull and Norwich Stations, and providing for interest on debentures and debenture stocks, there was £102,346 to be added to the sum of £78,201 brought forward from the last account, giving a total of £180,547. The General Reserve Fund (London) has been increased by £30,000 to £250,000, and dividends at the rate of 7% per annum on the cumulative preference stock, 5½% per annum on the "B" redeemable cumulative preference stock, and an interim dividend of 3½%, all less income tax, have been paid. The Directors now recommend the payment of a final dividend on the ordinary stock of 4%, less income tax, making 7½% for the year. The final dividend will absorb £22,230, thus reducing the carry-forward by £6,310 to £71,891. The Pension and Superannuation Funds have been increased by £11,506 to £160,856 by the addition of interest and further sums set aside at the Stations. The withdrawals from the Station Reserve Funds referred to above have reduced the Hull Fund to £9,572 and exhausted the Norwich Fund. These are statutory funds formed by the accumulation of profits earned at the Stations in excess of the amounts which the Company is entitled to take under the provisions of the Acts and Orders regulating those Stations, and they serve the purpose of stabilizing distributable profits and the price of gas. In view of their depletion and also of increased costs arising out of the war, the price of gas at these two Undertakings has been increased by 2d. a therm. Increases in price have also had to be made at most of the other undertakings controlled by the Company. The remaining 164,414 5½% "B" cumulative preference shares of £1 each were issued privately at a satisfactory premium, payment in full being received on Jan. 3, 1939, and were converted into stock by resolution at an Extraordinary General Meeting held on March 1, 1939. The total sales of gas were approximately 4¼% less than in 1938.

Hexham

At the recent annual meeting of the Hexham Gas Company it was stated that there had been a gratifying increase of 6% in the amount of gas sold during the past year. The accounts showed a profit of £2,772, and a dividend was declared of 4¼% on the ordinary stock.

Ilfracombe

The quantity of gas sold by the Ilfracombe Gas Company during 1939 was 538,805 therms, which compares with 545,711 therms in the preceding year. The balance of revenue carried to Profit and Loss Account is £4,930, as against £4,393 a year ago. There was no capital expenditure incurred during the year, and the balance at credit of Capital Account is now £16,392. The dividend on the consolidated ordinary stock for the year is repeated at 6½%.

Wellington, N.Z.

After payment of the year's dividend of 8% on the ordinary shares for 1939, the Wellington Gas Company, Ltd., of New Zealand, will carry forward £19,193, as compared with £19,547 a year ago. To provide for the increased demand for gas, further plant has been ordered from England. The Gas Industry of the Dominion, consisting of 26 municipalities and 18 gas companies, gas appliance and equipment manufacturers, and coal suppliers, combined to provide a Gas Court at the Centennial Exhibition which opened in November. Gas was first supplied in Wellington in 1871; the quantity sent out in the first month being 22,800 cu.ft. It required 29 years for the annual sales to reach 100,000,000 cu.ft. Since then the Company have continued to progress; the record output for one day being reached on July 13 last year, when it was 3,329,000 cu.ft. The Company are to be congratulated upon their long period of service to the public.

Trade News

"Dejector" Water Softening

A new method of water softening is provided by the "Dejector" distributed by British Boiler Accessories, Ltd., of 46, Victoria Street, London, S.W.1, for whom it is manufactured by John Thompson (Wolverhampton), Ltd. The whole process is transferred to the interior of the boiler, and promoted there by the existing pressure and temperature. The water to be softened is caused to circulate in such a way that the sludge remains suspended in the running water and is separated only in one place—namely, in the "Dejector" which is always at boiler pressure. The water leaves the apparatus practically pure and flows back into the boiler. The sludge can be removed from time to time from the "Dejector" in a simple manner, and any tendency for sludge to concentrate in the boiler water is greatly reduced. The system, which is already in use at a number of gas-works, is applicable to any type of boiler, and it is claimed that it will not only prevent the formation of scale by removing the sludge but will clear out previously-formed scale.

Continuous Burning Coke Stove

Designed on new principles and made for burning graded gas coke nuts, the "Neocoke" stove made by the London Warming Co., Ltd., of Percy Street, London, W.1, is claimed to be capable of heating comfortably a room 15 ft. square, at cost of a fraction over 4d. per 24 hours. During the daytime the doors of the stove are usually left open, and the fire will burn for several hours without attention. When the doors are closed the draught is controlled by a circular ventilator in the ash door, so that the fire will easily remain alight all night. This is effected by partially lagging the firebox, which keeps the temperature of the coke above ignition point for longer periods than would otherwise be the case. Although the construction of the stove does away with the tiresome necessity of lighting the fire each morning, the stove is provided with a gas poker for easy ignition.

Washer and Copper Merger

The manufacturing rights of "Swift" and "Vernon" automatic gas coppers have been acquired by Press Caps, Ltd., and the business of R. Vernon, Ltd., formerly carried on at Morden Road, Merton, has thus come under centralized control at Chandos Road, Park Royal. Press Caps, Ltd., are manufacturers of the "Darling" clothes washer, the "Chandos" water softener and other household specialities.

Philplug Products

One of the minor but often difficult problems with which the gas fitter is faced is to fix piping or appliances to walls and ceilings in such a way as to ensure absolute safety and rigidity. Plugs and plugging compounds of various kinds are now at his disposal, and one of the latest additions to his selection is Philplug, manufactured by Philplug Products, Ltd., Aintree Road Works, Perivale. Philplug, which is covered by world-wide patents, is manufactured from a special grade of asbestos fibre so treated that it acts as a de-oxidizing agent and prevents corrosion taking place on the embedded portion of the screw. It is supplied, not in ready-made plugs, but in dry fibrous form, and to render it plastic for rolling into plugs for insertion in the wall just sufficient water is added to cause the fibres to bind together. Although it is introduced into the hole in a plastic condition it hardens under pressure and carries its full load immediately. It does not require an accurate hole in the masonry and thus obviates the skill necessary when ready-made plugs are employed. It is fireproof and waterproof and is unaffected by extreme weather conditions, and it becomes an integral part of the masonry and forms in it a perfectly moulded thread for the accommodation of the screw. It relieves the problem of stocking, as any one tin of Philplug will fix any size screw. The hand rolling of the plugs is a simple process, and for working in awkward positions it is an easy matter to roll a number of plugs in advance. For use in cavity bricks or hollow masonry a "U" clip is available to prevent the material being pushed into the cavity. Piercers, rammers, drills, and other accessories are supplied by the manufacturers.

An equally, if not more, important application of the same kind of material is adapted for pipe jointing, and severe tests at the Building Research Station and elsewhere have proved it to be eminently suitable for this purpose. An official report of the Building Research Station tests compares the properties of Philplug with those of tarred jute and lead fibre. A test for permeability to air under pressure showed a pressure drop of 0.4-0.5 lb. per sq.in. in 24 hours in the case of the Philplug joint, against 5.4 and 3.25 respectively in two tests on lead fibre and tarred jute. Even more favourable results were obtained in tests for permeability to water under pressure. For water pressure Philplug was shown to be suitable for pressures up to 100 lb. per sq.in., and it satisfactorily withstood a test against an air pressure of 12-13 lb. per sq.in. The use of Philplug for keeping railway sleeper fastenings secure is further evidence of its strength.

SELL YOUR CUSTOMERS the "SAVE-TY" COOKER

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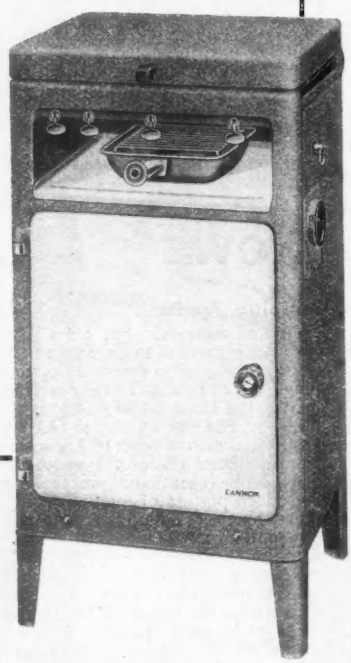

The streamlined Cannon "Henley" cooker has ALL the advantages: Flush-fitting door and "Autimo" oven-heat control, "Porceliron" finish, cast-iron linings with embossed shelf positions, automatic plate rack, and high-speed grill.

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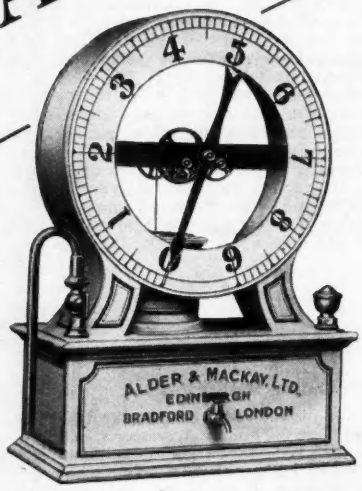
King's PRESSURE GAUGES



Illustrated is the Circle Gauge for 9" readings which is a particularly sensitive instrument. The brass spindle is located on roller bearings and the black figures are 1¼" high on a 14" diam. white enamelled dial. The filling plug and gas connection are interchangeable.

Further particulars of other gauges and prices will be sent on application.

ALDER & MACKAY LTD.

EDINBURGH - LONDON - BRADFORD & BRANCHES

Current Sales of Gas Products

The London Market

March 21.

There is little change to report in the values of tar products, present values in London market being as under:

Pitch is rising, and is said to be about 45s. to 50s. per ton f.o.b.

Creosote about 5d. per gallon.

Refined tar 3¾d. to 4d. per gallon.

The price of pure toluole under the Ministry of Supply Order is just under 2s. 5d. per gallon.

Pure Benzole is about 1s. 10d.

95/160 solvent naphtha about 1s. 11d.

90/160 pyridine about 16s. to 17s.

All per gallon naked.

Refined naphthalene crystals about £20 per ton in bags.

All *ex* makers' works.

The Provinces

March 21.

Crude Gas-Works Tar, 24s. to 29s.

To avoid misunderstanding, it is necessary to state that the above price is not claimed to represent a market value. It is a price worked out from week to week upon a system which has been used for many years as a basis for the fixing of certain contracts for crude tar of varying qualities in different areas.

The average prices of gas-works products during the week were: Pitch—East Coast, 40s. to 42s. 6d. f.o.b. West Coast—Manchester, Liverpool, Clyde, 35s. to 37s. 6d.* Toluole, naked, North, 1s. 9½d. (Controlled by the Ministry of Supply Order No. 1, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 9d. to 9½d. Solvent naphtha, naked, North, 1s. 8d. to 1s. 9d. Heavy naphtha, North, 1s. 4½d. to 1s. 5½d. Creosote, *ex* works, in bulk, North, liquid and salty, 4½d. to 5d.; Scotland, 4½d. to 5d.; low gravity, 4½d. to 5d. Carbolic acid, 60's. 3s. 6d. to 3s. 7½d. Naphthalene, £15 to £20. Salts, 75s. to 85s., bags included. Anthracene, "A" quality, 4½d. to 4¾d. per minimum 40% purely nominal. Heavy oil: Unfiltered anthracene oil, (min. gr. 1,080), 5½d. to 5¾d.; filtered heavy oil (min. gr. 1,080), 5¾d. to 6d.; heavy anthracene oil gr. less than 1,080, 6d. to 6½d.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls, whatever they may be.

Scotland

GLASGOW, March 23.

Trading in most products is on a small scale, but prices remain steady.

Crude gas-works tar.—Actual value is unchanged at round 35s. to 37s. per ton *ex* works in bulk.

Pitch.—The tar distillers are comfortably placed and value is firm at 27s. 6d. to 30s. per ton f.o.b. for export, and about 27s. 6d. per ton *ex* works in bulk for home trade.

Refined tar.—The forward position is unknown, but makers' prices for home delivery are fixed at 4¼d. to 4½d. per gallon. For export supplies are available at 2½d. to 2¾d. per gallon, both f.o.r. naked.

Creosote oil.—Production is well looked after with prices as under: Specification oil, 5d. to 5¼d. per gallon; low gravity, 6¼d. to 6½d. per gallon; neutral oil, 5¼d. to 5¾d. per gallon; all *ex* works in bulk.

Cresylic acid.—Orders are not too plentiful with quotations as under: Pale, 97/99%, 2s. 1d. to 2s. 3d. per gallon; dark, 97/99%, 1s. 10d. to 2s. per gallon; pale, 99/100%, 2s. 6d. to 2s. 9d. per gallon; all *ex* works in buyers' packages.

Crude naphtha continues to command about 7d. to 7½d. per gallon *ex* works in bulk, according to quality.

Solvent naphtha.—90/160 grade is 1s. 8d. to 1s. 9d. per gallon, and 90/190 heavy naphtha is about 1s. 4d. to 1s. 5d. per gallon.

Motor benzole remains at 1s. 6¼d. to 1s. 7d. per gallon.

Pyridine.—Prices are nominal with 90/160 grade at 17s. to 18s. per gallon and 90/140 grade at about 19s. to 20s. per gallon.

Contracts Advertised

Portable Conveyor.
Spenborough Gas Department. [p. 702.]
Mechanical Shovel.
East Hull Gas Company. [p. 702.]
Boosting Plant.
Warrington Gas Department. [p. 702.]
Reinforced Concrete Gantry.
Warrington Gas Department. [p. 702.]
Exhauster.
Warrington Gas Department. [p. 702.]

Trading Results in 1939.

Settle, Speakman & Co., Ltd.—The Directors report a profit of £34,902 for the year 1939 against £61,217 for the previous year, after taxation reserve of £58,855, against last year's N.D.C. of £3,402. Nothing is placed to reserve, against £24,975 last year, and the dividend is 10%, the same as before, leaving a carry-forward of £20,217, against £17,815.

Worthington Simpson.—Profits for 1939 amounted to £37,240, against £26,256 for the previous year, and dividend has been raised from 7½% to 10%. General reserve takes £10,000, against £5,000, and the carry-forward is £19,327 against £16,319.

G. D. Peters & Co., Ltd.—Presiding at the Annual Meeting on March 22, Lord Inverforth reported a net profit of £128,793, against £102,767, and a final dividend of 15%, making 20% for the year. Apart from a substantial amount of armament work, the Board was endeavouring to maintain a reasonable proportion of business in the Company's own products, and the Company had started 1940 with a good volume of work of that nature on hand.

Permac Metal-to-metal Jointing

THOMAS & BISHOP LTD
37 TABERNACLE ST LONDON. E.C.2

For every size of works and every class of coal...

WEST'S

CARBONIZING PLANTS

GLOVER-WEST VERTICALS

WESTVERTICAL CHAMBERS

440 carbonizing plants have been built or are under construction by West's in 24 countries. Working results from a wide variety of gas coals have established the high efficiency and adaptability of the West systems.

WEST'S

GAS IMPROVEMENT CO · LTD ·

MILES PLATTING MANCHESTER 10

TELEPHONE—COLLYHURST 2961-2-3-4-5 · TELEGRAMS—STOKER, MANCHESTER

LONDON OFFICE TEMPORARY ADDRESS—BATH ROAD · HARMONDSWORTH · WEST DRAYTON · MIDDLESEX TEL.—WEST DRAYTON 2288-9

GAS STOCKS AND SHARES

The announcement that the £300,000,000 War Loan had been oversubscribed was made last week and large applications will receive only 80% of their requirements. Dealings in the new loan commenced at 10s. discount, but finally closed at par on Thursday. Business generally during the week was quiet, the meeting of the two dictators, the revision of minimum prices for gilt-edged stocks to higher levels, and the coming holiday were all adverse factors though on the whole prices were not seriously affected and markets closed with a confident undertone. British Funds were fractionally lower; the minimum for 2½% Consols has been increased from 62 to 70½ against last week's quotation of 72½. Home rails reacted at the opening, though some of the loss was subsequently recovered and the market closed firm. Leading industrials maintained their levels, iron, steel, and tobacco shares receiving a good deal of attention. The Budget is due on April 23.

The volume of business in the Gas Market was comparatively good for the first three days of business, though there was not much done on Thursday. It is interesting to note that the stocks and shares of those companies operating abroad received more attention than usual. Prices on the whole remained firm and in the Official List, apart from the usual ex div. changes, it will be seen that Bournemouth 4% debenture rose five points to 97½, the highest quotation in the List for a debenture stock carrying this rate of interest, business being recorded at 96. Watford 5% preference closed 2 points higher at 97½, but Gas Light units reacted a further 3d. to 17s. 3d. A number of stocks in the Supplementary List were marked ex div., a feature being the rise of 5 to 80 in Wrexham ordinary. It is regretted that owing to the holidays the lists from the Provincial Exchanges have not arrived in time to give the latest prices.

The accounts of the British Gas Light Company show a net profit of £43,159, against £59,079 for 1938. This amount is increased by £59,187 taken from the reserves of the Hull and Norwich stations. The dividend is maintained at 7½% for the year and £30,000 (against £10,000) goes to the general reserve. The carry forward is £71,891, against £78,201 brought in.

Official Quotations on the London Stock Exchange

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Mch. 19.	Rise or Fall on Week.
1,767,439	Mch. 11	8	7	Alliance & Dublin Ord. ...	108—118	...
374,000	Dec. 27	4	4	Do. 4 p.c. Deb.	80—90	...
877,576	Nov. 6	5	5	Asscd. Gas & Water U'd'ts Ord.	14/6—16/6	...
500,000	"	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	16/6—18/6	...
535,545	"	4	4	Do. 4 p.c. Red. Cum. Pref.	15/—17/—	...
318,730	"	4	4	Do. 4 p.c. Irred. Cum. Pref.	13/6—15/6	...
750,000	Mch. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	82—87*	−1
560,070	Feb. 19	7	7	Barnet Ord. 7 p.c.	122—127	...
300,000	Oct. 9	1/9⅜	1/4⅜	Bombay, Ltd.	20/—22/—	...
181,915	Feb. 26	9¼	9¼	Bournemouth Sliding Scale ...	145—150	...
690,526	"	7	7	Do. 7 p.c. max. ...	118—123	...
493,960	"	6	6	Do. 6 p.c. Pref. ...	113—118	...
50,000	Dec. 18	3	3	Do. 3 p.c. Deb. ...	70—75	...
362,025	"	4	4	Do. 4 p.c. Deb. ...	95—100	+5
335,000	"	5	5	Do. 5 p.c. Deb. ...	105—110	...
357,900	Feb. 19	7¼	6¾	Brighton, &c., 6 p.c. Con. ...	103—108	...
£69,955	"	6¾	5¾	Do. 5 p.c. Con. ...	100—105	...
205,500	"	6	6	Do. 6 p.c. 'B' Pref. ...	103—108	...
855,000	Mch. 11	7	8	British Ord.	102—107	...
100,000	Dec. 18	7	7	Do. 7 p.c. Pref.	120—125	...
350,000	"	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	−2
120,000	"	4	4	Do. 4 p.c. Red. Deb.	73—78	...
450,000	"	5	5	Do. 5 p.c. Red. Deb.	98—103	...
100,000	22 May '33	6	4	Cape Town, Ltd.	¼—¾	...
100,000	6 Nov. '33	4½	4½	Do. 4½ p.c. Pref.	1—3	...
150,000	Dec. 18	4½	4½	Do. 4½ p.c. Deb.	55—65	...
626,860	Jan. 29	6	5⅜	Cardiff Con. Ord.	103—108	...
237,860	Dec. 18	5	5	Do. 5 p.c. Red. Deb. ...	95—100	...
98,936	Oct. 9	2/—	2/—	Colombo Ord.	1¼—1½	...
24,510	"	1/4⅛	1/4⅛	Do. 7 p.c. Pref.	20/6—22/6	...
739,453	Sept. 27	−/11.48	−/11.48	Colonial Gas Assn. Ltd. Ord. ...	15/—17/—	...
296,144	"	1/3.30	1/3.30	Do. 8 p.c. Pref.	20/6—22/6	...
1,775,005	Jan. 29	4	2	Commercial Ord.	47—52	...
140,000	Feb. 19	4	4	Do. 4 p.c. Red. Pref. ...	87—92	...
620,000	Dec. 11	3	3	Do. 3 p.c. Deb.	62—67	...
286,344	Feb. 19	5	5	Do. 5 p.c. Deb.	95—100	...
200,000	"	3¾	3¾	Do. 3¾ p.c. Red. Deb. ...	93—98	...
807,560	Feb. 12	7	7	Croydon sliding scale	98—103	...
644,590	"	5	5	Do. max. div.	83—88	...
£20,385	Dec. 7	5	5	Do. 5 p.c. Deb.	100—105	...
£ 660	Feb. 19	5	5	Dudley, Brierley Hill & Dist. Ord.	98—103	...
82,275	"	5	5	Do. 5 p.c. Con. Pref. ...	93—98	...
79,000	"	3¾	3¾	Do. 3¾ p.c. Red. Deb. ...	93—98	...
239,000	Jan. 29	5	88/6	East Hull Ord. 5 p.c.	80—90	...
187,215	Feb. 12	5¾	5¾	East Surrey Ord. 5 p.c. ...	93—98	...
176,211	Dec. 18	5	5	Do. 5 p.c. Deb. ...	90—100	...
250,000	Nov. 13	8	4	Gas Consolidation Ord. 'B' ...	14/—17/—	...
250,000	"	4	4	Do. 4 p.c. Red. Cum. Pref.	16/—18/—	...
19,152,410	Jan. 29	5⅜	3⅜	Gas Light & Coke Ord. ...	16/9—17/9a	−−/3
2,600,000	"	3½	3½	Do. 3½ p.c. max.	62—67	...
4,477,106	"	4	4	Do. 4 p.c. Con. Pref. ...	85—90	...
2,993,000	Jan. 2	3¾	3¾	Do. 3¾ p.c. Red. Pref. ...	87—92	...
8,602,497	Nov. 27	3	3	Do. 3 p.c. Con. Deb. ...	77—82	...
3,642,770	"	5	5	Do. 5 p.c. Red. Deb. ...	105—110	...
3,500,000	"	4½	4½	Do. 4½ p.c. Red. Deb. ...	102—107	...
700,000	Mch. 11	3¼	3¼	Do. 3¼ p.c. Red. Ded. ...	87—92	...
270,466	Feb. 19	6	6	Harrogate New Cons.	93—98	...
157,500	Mar. 20	‡1/—	‡1/—	Hong Kong and China Ord. ...	¼—¾	...
2,600,000	Oct. 23	12	4	Imperial Continental Cap. ...	80—85	...
172,810	Jan. 29	3½	3½	Do. 3½ p.c. Red. Deb. ...	80—85	...
63,480	Dec. 18	3	3	Maidstone 3 p.c. Deb.	55—60	...
45,000		†10	†8	Malta & Mediterranean ...	92—102	...
				Metropolitan (of Melbourne) ...		
392,000	Oct. 2	5½	5½	5½ p.c. Red. Deb.	95—100	...
231,977	Feb. 19	5	5	M.S. Utility 'C' Cons.	75—80	...
368,658	"	4	4	Do. 4 p.c. Cons. Pref. ...	82—87	...
390,076	Dec. 18	4	4	Do. 4 p.c. Deb. ...	85—90	...
148,955	Dec. 18	5	5	M.S. Utility 5 p.c. Deb. ...	102—107	...
125,000	Jan. 2	3½	3½	Do. 3½ p.c. Red. Bds. ...	90—95	...
675,000	Nov. 6	†3	†4	Montevideo, Ltd.	55—60	...
250,000	Mch. 18	7½	5⅞	North Middlesex 6 p.c. Con. ...	103—108*	−2
396,160	Jan. 29	5	5	Northampton 5 p.c. max. ...	90—95	...
300,000	Nov. 6	†7	9	Oriental, Ltd.	118—123	...
468,537	Dec. 11	8	7	Plymouth & Stonehouse 5 p.c.	114—119	...
621,667	Feb. 5	8½	8½	Portsmouth & Gosport Cons.	110—115	...
241,446	"	5	5	Do. 5 p.c. max.	85—90	...
73,350	"	5	5	Do. 5 p.c. Pref.	90—95	...
75,000	"	4	4	Do. 4 p.c. Pref.	75—80	...
114,000	Feb. 5	5	5	Preston 5 p.c. Pref.	88—93	...
247,966	Dec. 18	4	4	Primitiva 4 p.c. Cons. Deb. ...	93—98	...
625,959	Jan. 15	4	4	Do. 4 p.c. Red. Deb. ...	91—96	...
15,000	Mch. 11	6	6	San Paulo 6 p.c. Cum. Pref. ...	7½—8½	...
441,275	Oct. 9	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	17/—19/—	...
460,810	Mch. 11	−/10⅝	−/10⅝	" " 4½ p.c. Cum. Pref. ...	16/6—18/6	...
133,201	Feb. 12	8½	5	Shrewsbury 5 p.c. Ord. ...	105—115	...
9,000	June 5	‡4	‡4	South African Ord.	4—5	...
1,996,297	Aug. 21	1/2⅜	1/2⅜	South East'n Gas Cn. Ld. Ord.	16/—18/—	...
1,000,000	Mch. 4	−/10⅝	−/10⅝	Do. 4½ p.c. Red. Cum. Pref.	16/6—18/6	...
769,191	"	4	4	Do. 4 p.c. Cum. Pref. ...	14/6—16/6	...
150,000	Feb. 12	3½	3½	Do. 3½ p.c. Red. Deb. ...	89—94	...
6,709,895	"	5	4	South Met. Ord.	70—75	...
1,135,812	"	6	6	Do. 6 p.c. Irred. Pref. ...	106—111	...
850,000	"	4	4	Do. 4 p.c. Irred. Pref. ...	80—85	...
1,895,445	Dec. 27	3	3	Do. 3 p.c. Deb.	70—75	...
1,000,000	Jan. 15	5	5	Do. 5 p.c. Red. Deb. ...	100—105	...
600,000	"	3¾	3¾	Do. 3¾ p.c. Red. Deb. ...	92—97	...
1,543,795	Feb. 5	6	3	South Suburban Ord. 5 p.c. ...	77—82	...
512,925	"	5	5	Do. 5 p.c. Pref.	95—100	...
500,000	"	4	4	Do. 4 p.c. Pref.	82—87	...
250,000	"	3¾	3¾	Do. 3¾ p.c. Red. Pref. ...	86—91	...
888,587	Dec. 11	5	5	Do. 5 p.c. Deb.	103—108	...
250,000	"	4	4	Do. 4 p.c. Deb.	85—90	...
200,000	Feb. 12	3½	3½	Do. 3½ p.c. Red. Deb. ...	87—92	...
427,859	Sept. 18	1/2⅜	9⅜	S. Western Gas & Water Ord.	13/6—15/6	...
160,523	Oct. 9	−/10⅝	−/10⅝	Do. 4½ p.c. Red. Cum. Pref.	17/6—19/6	...
110,000	Dec. 18	4	4	Do. 4 p.c. Red. Deb. ...	90—95	...
750,541	Feb. 5	5	5½	Southampton Ord. 5 p.c. ...	77—82	...
148,836	Dec. 27	4	4	Do. 4 p.c. Deb.	85—90	...
350,000	Feb. 12	5½	5½	Swansea 5½ p.c. Red. Pref. ...	97—102	...
200,000	Dec. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—100	...
1,076,490	Feb. 26	6½	5	Tottenham and District Ord....	93—98	...
409,835	"	5½	5½	Do. 5½ p.c. Pref.	103—108	...
62,235	"	5	5	Do. 5 p.c. Pref.	95—100	...
453,380	Dec. 11	4	4	Do. 4 p.c. Deb.	85—90	...
1,247,505	Oct. 23	6	4	U. Kingdom Gas Cor. Ord. ..	14/—16/—	...
1,085,952	Nov. 20	4½	4½	Do. 4½ p.c. 1st Cum. Pref. ...	15/—17/—	...
772,709	"	4	4	Do. 4 p.c. 1st Red. Cum. Pf.	14/6—16/6	...
745,263	Dec. 18	4½	4½	Do. 4½ p.c. 2nd Non-Cum. Pf.	13/—15/—	...
1,093,656	Mch. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	84—89*	−1
378,106	Mch. 11	7	7	Uxbridge, &c., 5 p.c.	95—105	...
133,010	"	5	5	Do. 5 p.c. Pref. ...	95—100	...
1,371,138	Feb. 5	6½	3½	Wandsworth Consolidated ...	86—91	...
2,525,768	"	4	4	Do. 4 p.c. Pref.	84—89	...
1,343,964	Dec. 18	5	5	Do. 5 p.c. Deb.	103—108	...
383,745	"	4	4	Do. 4 p.c. Deb.	85—90	...
400,000	"	3¾	3¾	Do. 3¾ p.c. Red. Deb. ...	90—95	...
558,342	Jan. 29	6¼	6	Watford and St. Albans Ord. ...	95—100	...
200,000	"	5	5	Do. 5 p.c. Pref.	95—100	+2
200,000	"	5½	5½	Do. 5½ p.c. Pref.	100—105	...
200,000	"	4	4	Do. 4 p.c. Rd. Pf. (1973/8)	85—90	...
100,000	"	33/4§	4	Do. 4 p.c. Red. Pf. (1959)	93—98	...
200,000	Dec. 11	3¼	3½	Do. 3½ p.c. Red. Deb. ...	83—88	...

a.—The quotation is per £1 of Stock. * Ex. Div. † Paid free of income-tax. ‡ For year. § Actual.

Supplementary List and Provincial Exchanges overleaf.

STOCK AND SHARE LIST—Contd.

Supplementary List, not Officially Quoted, London

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Nominal Quotations Mch. 21.	Rise or Fall on Week.
202,152	Mch. 18	5	5	Ascot Ord. ...	80—85*	−2½
128,182	Dec. 27	5	5	Do. 5 p.c. Pref. ...	88—93	...
31,035	Mch. 4	−/9⅜	−/9⅜	Associated Utilities 4 p.c. Pref.	15/—17/-	...
100,000	Dec. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—95	...
17,000	Feb. 19	8	8	Bognor Orig. Ord. 'A' ...	102—112	...
62,210	,,	8	8	Do. New Add. 'A' ...	102—112	...
87,160	,,	7	7	Do. New 7 p.c. max. ...	95—105	...
37,440	Jaa. 29	10	10	Cam. Univ. & Town 10 p.c. max.	145—155	...
125,970	,,	7	7	Do. 7 p.c. max.	105—115	...
29,025	,,	5	5	Do. 5 p.c. max.	80—90	...
96,410	Jan. 29	4½	4½	Cardiff 4½ p.c. Pref. ...	90—95	...
55,520	Feb. 19	6	6	Colchester 6 p.c. Pref.	95—100	...
90,550	Mch. 18	5	5	Do. 5 p.c. Deb. ...	98—103*	−2
180,000	Feb. 12	4	4	Croydon 4 p.c. Pref.	80—85	...
130,000	Dec. 27	4	4	Do. 4 p.c. Deb.	85—90	...
65,000	Mch. 4	7½	6⅞	Eastbourne 'A' 5 p.c.	105—115	...
198,000	,,	6	5⅝	Do. 'B' 3½ p.c.	90—100	...
112,312	,,	5	5	Do. 5 p.c. Pref.	90—95	...
130,000	Dec. 18	5	5	Do. 5 p.c. Deb.	98—103	...
130,500	Feb. 19	7½	7½	Exeter New Ord. (£10)	10—12	...
24,000	Aug. 21	8½	8½	Gt. Yarmouth 8½ p.c. max. (£30)	15—20	...
59,400	,,	7½	7½	Do. 7½ p.c. max. (£30) ...	10—15	...
81,160	Dec. 11	5½	5½	Do. 5½ p.c. Deb.	102—107	...
132,600	Feb. 26	8	9	Guildford Cons.	110—120	...
54,055	,,	5	5	Do. 5 p.c. Pref.	90—95	...
68,250	Dec. 11	5	5	Do. 5 p.c. Deb.	90—95	...
186,690	Feb. 19	7	5	Hampton Court Cons. ...	75—85	...
86,046	June 19	‡4½	‡5	Holyh'd&N.W.G.&W.Cpn.Ord.	13/6—15/6	...
90,000	Feb. 12	4	4	Lea Bridge 4 p.c. Pref.	65—75	...
40,000	,,	6	6	Do. 6 p.c. Pref.	105—115	...
94,876	Dec. 18	4	4	Do. 4 p.c. Deb.	75—80	...
73,620	Mch. 18	8½	8½	Luton Cons. 'A'	115—125*	...
187,960	Feb. 26	4	5½	Mid Kent Ord. (£10)	7½—8½	...
230,940	Feb. 5	10	10	Oxford & District Ord. ...	135—145	...
77,112	,,	5	5	Do. 5 p.c. Pref.	85—90	...
50,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	100—105	...
126,193	Oct. 30	7½	7½	Peterborough Ord.	140—150	...
64,990	Mch. 18	7	7	Redditch Ord.	100—110*	...
166,850	Feb. 19	8	8	Romford Ord.	108—118	...
60,000	,,	4	4	Do. 4 p.c. Pref.	85—90	...
44,000	Mch. 18	5	5	Do. 5 p.c. Deb.	97—102*	...
25,570	Feb. 12	5½	5½	Rugby 5½ p.c. Pref. ...	95—105	...
25,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	100—105	...
42,750	Dec. 11	5½	5½	Do. 5½ p.c. Deb.	103—108	...
110,950	Feb. 26	8	8	Ryde Ord.	100—110	...
270,086	Mch. 18	7	7	Slough Ord.	98—103*	−2
21,000	Dec. 11	5	5	Do. 5 p.c. Deb.	92—97	...
28,872	Nov. 6	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	14/—16/-	...
28,865	Mch. 18	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	14/—16/-*	...
127,228	Feb. 19	5	7	Swindon Cons.	75—80	...
60,425	Dec. 18	5	5	Do. 5 p.c. Deb.	92—97	...
64,380	,,	5	5	Torquay & Paignton 5 p.c. Pref.	82—87	...
130,000	Feb. 12	5	5	Wakefield Ord.	85—95	...
81,650	,,	5	5	Do. 5 p.c. max.	75—80	...
82,000	Jan. 29	6	6	Weymouth Ord.	82—87	...
273,626	Feb. 12	7	7	Wolverhampton Cons. Ord. ...	115—125	...
98,384	,,	6	6	Do. 6 p.c. Pref.	105—115	...
160,000	Dec. 18	5½	5½	Do. 5½ p.c. Red. Deb. ...	100—105	...
106,490	Mch. 18	5½	5½	Wrexham Ord	75—85*	+5
90,000	Dec. 18	5	5	York 5 p.c. Red. Deb.	95—100	...
183,640	Feb. 19	6	6	Yorktown (Cam.) 5 p.c. Cons.	82—87	...
120,000	,,	5	5	Do. 5 p.c. Pref.	85—90	...
35,000	Dec. 18	5½	5½	Do. 5½ p.c. Deb.	103—108	...

BRISTOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Mch. 15.	Rise or Fall on Week
347,756	Feb. 12	5	6	Bath Cons.	99—103	...
1,667,250	Feb. 5	5	5	Bristol, 5 p.c. max.	102—104	...
120,420	Dec. 18	4	4	Do. 1st 4 p.c. Deb. ...	98—101	...
415,250	,,	4	4	Do. 2nd 4 p.c. Deb. ...	98—101	...
328,790	,,	5	5	Do. 5 p.c. Deb.	113—116	...
274,000	Feb. 26	5	5	Newport (Mon.) Ord.... ...	91—94	...
13,200	Sept. 4	8½	7	Pontyp'l Gas & W. 10 p.c. 'A'	12—13	...
13,600	,,	6	5	Do. 7 p.c. 'B'	10½—11	...
40,000	,,	6	5	Do. 7 p.c. 'C'	10½—11	...
140,778	Feb. 12	5	5	Weston-super-Mare Cons. ...	92—96	...
64,338	Dec. 27	4	4	Do. 4 p.c. Deb.	90—95	...
33,340	,,	7½	7½	Do. 7½ p.c. Deb.	140—150	...

LIVERPOOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Mch. 15.	Rise or Fall on Week
157,150	Feb. 5	5	6½	Chester 5 p.c. Ord.	98—101	...
92,500	Dec. 18	4	4	Do. 4 p.c. Pref.	80—84	...
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	85—88	...
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	95—99	...
2,167,410	Feb. 19	6	6	Liverpool 5 p.c. Ord.	103—105	...
245,500	Dec. 18	5	5	Do. 5 p.c. Red Pref. ...	95—100	...
306,083	July 17	4	4	Do. 4 p.c. Deb.	99—101	...
106,280	Feb. 5	10	8	Preston 'A' 10 p.c.	171—181	...
188,219	,,	7	7	Do. 'B' 7 p.c.	123½—133½	...

NEWCASTLE EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Mch. 15.	Rise or Fall on Week
122,577	Feb. 19	7	7	Blyth 5 p.c. Ord.	113—118	...
732,000	Feb. 19	4	4	Hartlepool G. & W. Co. & New	63½—64½	...
2,430,267	Feb. 5	5	5 7/10	Newcastle & Gateshead Con.	19/9—20/3a	...
682,856	,,	4	4	Do. 4 p.c. Pref.	89—91	...
776,706	Dec. 27	3½	3½	Do. 3½ p.c. Deb.	84—86	...
277,285	April 24	5	5	Do. 5 p.c. Deb. '43 ...	101—103	...
332,351	Feb. 5	6	6	Sunderland 6 p.c. max. ...	109—111	...

NOTTINGHAM EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Mch. 15.	Rise or Fall on Week
542,270	Feb. 12	6	9	Derby Con.	103—108	...
55,000	Dec. 18	4	4	Do. 4 p.c. Deb.	98—103	...
20,000	Dec. 18	5	5	Long Eaton 5 p.c. Pref. ...	9—11	...
80,000	,,	5	5	Do. 5 p.c. Deb. ...	100—105	...

SHEFFIELD EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Mch. 15.	Rise or Fall on Week
10,000	Feb. 19	10	10	Great Grimsby 'A' Ord. ...	170—180	...
6,500	,,	10	10	Do. 'B' Ord. ...	170—180	...
79,000	,,	10	10	Do. 'C' Ord. ...	160—170	...
1,806,339	Feb. 26	6½	6½	Sheffield Cons.	123—125	...
95,000	Jan. 2	4	4	Do. 4 p.c. Deb.	98—100	...

a The quotation is per £1 of Stock.
* Ex. div. ‡ For year.

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